Rhodora

JOURNAL OF THE

NEW ENGLAND BOTANICAL CLUB

Conducted and published for the Club, by

MERRITT LYNDON FERNALD, Editor-in-Chief

JAMES FRANKLIN COLLINS
CHARLES ALFRED WEATHERBY } Associate Editors
LUDLOW GRISCOM

Vol. 37. May, 1935. No. 437.

CONTENTS:

The New England Botanical Club, Inc.
8 and 10 West King St., Lancaster, Pa.
Room 1001, 53 State St., Boston, Mass.

RHODORA.—A monthly journal of botany, devoted primarily to the flora of New England. Price, $2.00 per year, net, postpaid, in funds payable at par in United States currency in Boston; single copies (if available) 20 cents. Volumes 1–8 or some single numbers from them can be supplied only at advanced prices which will be furnished on application. Notes and short scientific papers, relating directly or indirectly to the plants of the northeastern states, will be considered for publication to the extent that the limited space of the journal permits. Forms will be closed five weeks in advance of publication. Authors (of more than two pages of print) will receive 25 copies of the issue in which their contributions appear. Extracted reprints, if ordered in advance, will be furnished at cost.

Address manuscripts and proofs to
M. L. FERNALD, 14 Hawthorn Street, Cambridge, Mass.

Subscriptions (making *all remittances* payable to RHODORA) to
Ludlow Griscom, 8 W. King St., Lancaster, Pa., or Museum of Comparative Zoology, Cambridge, Mass.

Entered at Lancaster, Pa., Post Office as Second Class Mail Matter.

Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 37. May, 1935. No. 437.

THE PLANT CONTENTS OF TWO MOUSE STOREHOUSES[1]

FRIEDA COBB BLANCHARD

WHILE turning sticks and logs in search of salamanders, the writer has twice in this vicinity uncovered the autumn storehouse of a mouse. Both of these stores were in damp, unpastured oak woods—the kind of woods in which salamanders and frogs abound.

I cannot say with certainty to what species of mouse these caches belonged. From the type of habitat it is fair to assume that they belonged to the deer mouse *Peromyscus leucopus noveboracensis*. The literature, however, assigns the type of stored food to Microtus. In hunting salamanders we not infrequently uncover a nest of Peromyscus, and have several times collected the partly grown young and raised them, making identification certain; but we have never found a nest of any other species in this type of woods.

The first storehouse was found in an oak woods in Freedom Township, Washtenaw County, about 15 miles from Ann Arbor, on November 19, 1922. This storehouse contained about one pint of tubers, rhizomes and seeds, mainly of three kinds, and two or three hickory nuts. Most of the material was saved for feeding some wild mice that were being kept in cages but a small amount was planted in the greenhouse for identification.

The bulk of the store was composed of the spindle-shaped, yellow tubers of the pepper-root, *Dentaria laciniata* Muhl. The species was determined later from the growing plants. Among the pepper-roots were numerous rootstocks of a violet, determined as *Viola sororia* Willd., and some "hog peanuts," the large, flattened, underground

[1] Paper from the Department of Botany of the University of Michigan, No. 523.

pods of *Amphicarpa monoica* (L.) Ell. Though they were not noticed before planting, there must have been present some tubers of the spring beauty, *Claytonia virginica* L., for this species came up in the flats. These tubers are very similar in size and color to the underground seed pods of Amphicarpa, and probably escaped notice among them.

The second storehouse was found under a log in an oak woods of White Oak Township, Ingham County, about 35 miles from Ann Arbor, on November 10, 1929. Like the first storehouse, this one contained about a pint of material. In addition to the rhizomes and underground seeds there were a few pieces of acorns (which may have been accidentally collected in scooping up the contents of the store) and about 60 pieces of stem, one to three inches long, apparently from the runners of some plant, perhaps a violet.

The rhizomes of a violet (species not determined) composed about half of the store. "Hog peanuts," the underground pods of *Amphicarpa monoica*, occupied about half as much space as the violets. The other quarter of the store consisted of five large rhizomes of *Geranium maculatum* L., 4 unidentified bulbs (that failed to grow), apparently liliaceous, and one single unidentified tuber of a different kind.

The two stores were alike in containing Viola and Amphicarpa in quantities. One had predominantly these two species, and lacked Dentaria; in the other, Dentaria far outbulked the other species. It is not known whether *Dentaria laciniata* is abundant in the woods where the nest lacking it was found.

University of Michigan, Ann Arbor.

A New Moss Flora, with biographical Sketch of the Author.[1]—For many years Father Dupret has been known as an enthusiastic bryologist. Since his death his many valuable notes have been collated and edited for publication by a younger associate of his in the Society of Saint-Sulpice, Father Alderic Beaulac. The result is a pamphlet of convenient size which ought to be of great help to moss students in eastern Canada and the northeastern United States as well.

The descriptions and appreciations of the different species show that Father Dupret knew and loved them as friends, as well as feeling a deep scientific interest in their characteristics. Thus he writes of *Grimmia Dupreti*, one of his discoveries, "Gathered at Oka, and a few neighboring places only, on the worn sandstones of the stone walls of this region. It

[1] Contributions du Laboratoire de Botanique de l'Université de Montréal, No. 25. *Études sur les Mousses de la région de Montréal.* Par H. Dupret. viii + 70 pages, 4 figures. 1934, $0.75.

is very difficult to detach from the rock: it is absolutely necessary to scratch it off with a knife. A very small plant. The capsules hardly reach beyond the top of the stem."

As a part of this interesting flora, Father Beaulac has written a most charming biographical sketch of Father Dupret. It is a beautiful picture of a refined man in the cloisters growing old serenely, because blessed with numerous friends and varied intellectual interests.—Clarence Hinckley Knowlton, Hingham, Massachusetts.

THREE DAYS OF BOTANIZING IN SOUTHEASTERN VIRGINIA

M. L. Fernald and Ludlow Griscom

(*Continued from page 157*)

Laportea canadensis (L.) Gaudich. Virginia: ditch at border of gum swamp south of North Landing, Norfolk Co., no. 2871.

Not represented in the Gray Herbarium from the coastal plain south of New York.

Polygonum arifolium L., var. **lentiforme**, var. nov., a forma typica recedit achaeniis minoribus lenticularibusque vix gibbosis 3–3.5 mm. latis 2.2–2.6 mm. crassis.—Prince Edward Island to southern Ontario, south to New Jersey, Pennsylvania, Ohio and Michigan. Type: swamp along Great Brook, Southwick, Massachusetts, *F. C. Seymour*, no. 251 (in Gray Herb.).

The common *Polygonum arifolium* of southeastern Canada and the northeastern States has the achene very definitely smaller than in the more southeastern plant. All material in fruit from the District of Columbia southward has the achenes 4–4.2 mm. broad and 3–3.2 mm. thick, with noticeably more umbonate sides. In view of the original Linnean citation of the species as coming from "Virginia, Florida," the southern plant must stand as typical *P. arifolium*.

Lespedeza acuticarpa Mackenz. & Bush. Virginia: dry border of gum swamp, Pungo Causeway, near Land of Promise, Princess Anne Co., no. 2838.

Our material is a close match for several sheets of the Missouri plant distributed by Bush. It is apparently the first from the Atlantic slope.

Variations of Rhus copallina.—The shrub and small tree of southeastern Virginia impressed us, as it did later Fernald and Long, by the numerous pairs of narrow leaflets, as contrasted with the fewer and broader leaflets of the northern and wide-ranging shrub. Linnaeus, in publishing the species, rested it upon earlier citations, one of them a specimen of Clayton's (no. 728, described by Gronovius),

the other a very conventionalized and barely recognizable figure of Plukenet's. The Clayton plant, having been definitely studied by Linnaeus, should be accepted as the type. Thanks to a life-sized tracing of the type, kindly supplied by Professor H. W. Rickett, who recently spent some time at the British Museum, we are now able to identify *R. copallina* as the small tree of the southeastern United States (south into Florida) with the lance-oblong leaflets definitely attenuate at base. This typical *R. copallina* extends locally along the coast to southeastern New York.

The more generally distributed variation, common from southern Maine to Michigan, southward into the upland of North Carolina and to Oklahoma, has the comparatively few leaflets more ovate-lanceolate or short-oblong and rounded at the base. This is var. *latifolia* Engler in DC. Mon. iv. 384 (1883).

In the Southwest, especially in Texas, the leaflets are lance-falcate, smaller and narrower than in typical *R. copallina*. This is var. *lanceolata* Gray, Journ. Bost. Soc. Nat. Hist. vi. 158 (1850).

In southern Florida the species is represented by var. *leucantha* (Jacq.) DC. Prod. ii. 68 (1825). This was based upon *R. leucantha* Jacq. Hort. Schoenb. iii. 50. t. 342 (1798). *R. leucantha* was a cultivated shrub of unknown origin. By Small it is restricted to the West Indies and the Everglade Keys of Florida. Apparently the only collection from the West Indies is *C. Wright*, no. 2290 from Cuba, first recorded by Grisebach as *R. copallina*, var. and cited by Engler (along with a Rugel specimen from Portsmouth, Virginia which is true *R. copallina*) as the basis of his *R. copallina*, var. *angustialata* Engler, l. c. Engler cited *R. leucantha* as a direct synonym of this variety. Wright's original field-label on the sheet in the Gray Herbarium states that it was CULTIVATED at Pinales Rangel, Sabanilla. Its source in Cuba is perhaps as vague as that of the Jacquin type.

Another variation in Florida, thence north to South Carolina is

Var. **obtusifolia** (Small), comb. nov. *Schmaltzia obtusifolia* Small, Fl. Se. U. S. 729 (1903). *R. obtusifolia* Small, Fl. Miami, 112 (1913).

THE VARIATIONS OF ROTALA RAMOSIOR (PLATE 345).—*Rotala ramosior* (L.) Koehne occurs in two very distinct varieties: one with small fruits and minute subulate bractlets, chiefly on sandy shores of the Atlantic coastal plain northward to Massachusetts, with remote areas on the sands of the Great Lakes and on the Pacific slope; the other, coarser throughout, with conspicuously larger fruits and elongate, linear-lanceolate bractlets. The latter occurs in rich low

grounds from the Hudson Valley to Iowa and southward; both varieties occurring in Virginia, the source of the Clayton type. *Ammania ramosior* L., upon which *R. ramosior* was based, rested wholly on the Clayton (Gronovian) plant, no. 774. This has been carefully compared by the junior author with characteristic specimens of the two extremes. The type is clearly a large plant of the coastal plain extreme, with the smaller leaves, and the abundant fruit never wider than in the largest of a characteristic Florida sheet and none quite as long. The larger, chiefly inland variety should, therefore, be called

Rotala ramosior (L.) Koehne, var. **interior** (tab. 345, figs. 1 et 2), planta robusta ad 4.5 dm. alta simplex vel plerumque ramosa, ramibus adscendentibus; foliis majoribus 5–10 mm. latis subsessilibus vel breve petiolatis; fructibus (3.2–) 3.8–4.4 mm. latis 3.5–5 mm. longis; bracteolis lineari-lanceolatis, 1.6–2.4 (–4) mm. longis.—Rich low ground, Hudson Valley, New York to Iowa, south to Florida, Louisiana and Oklahoma. Type: low wet grounds, Knox Co., Tennessee, July 21, 1890, *Albert Ruth*, no. 224 (in Gray Herb.).

Contrasted with var. *interior*, typical *Rotala ramosior* is distinguished as follows:

R. ramosior, var. **typica** (Pl. 345, fig. 4 and 3, transitional). *Ammania ramosior* L. Sp. Pl. 120 (1753). *A. ramosa* Hill, Veg. Syst. xi. 14 (1767). *A. humilis* Michx. Fl. Bor.-Am. i. 99 (1803). *A. auriculata* Raf. Atl. Journ. 146 (1832). *Boykinia humilis* Raf. Aut. Bot. 9 (1840). *A. occidentalis*, var. *pygmaea* Chapm. Fl. So. U. S. 134 (1860). *R. ramosior* (L.) Koehne in Mart. Fl. Bras. xiii.^{2} 194 (1875). Plant low, simple to diffusely branched or depressed, rarely 2 dm. high: larger leaves 1.5–4 (–5) mm. broad, longer-petioled: fruit smaller, 2–3.3 mm. broad, 2–4 mm. long; bractlets subulate, 0.5–1.4 mm. long.—Sandy pond-shores, etc., coastal plain from Massachusetts to Florida and Texas; sands of southern Michigan, northern Indiana, Illinois and Minnesota; also Washington and Oregon.

Rafinesque, Aut. Bot. 39 (1840) gave names to "4 sp. or var. blended in *A. ramosa*" but his diagnoses, based merely on habit rather than more fundamental characters, are not clearly decipherable.

Rhexia in northeastern America (Plates 346 and 347).—In the area covered by Gray's Manual and Britton's Manual five species of *Rhexia* have been recognized: *R. virginica* L. (pl. 347, figs. 1–4, and pl. 346, fig. 5), widespread from Nova Scotia southward and westward; *R. mariana* L. (pl. 347, figs. 5 and 6, and pl. 346, fig. 7), from Florida north to southeastern Massachusetts, and reputed to grow in the interior; *R. interior* Pennell (pl. 346, fig. 6 and pl. 347, fig. 7), somewhat related to the two preceding; *R. aristosa* Britton (pl. 347, fig. 8), an exceedingly local species of the coastal plain from Georgia

to New Jersey; and *R. ciliosa* Michx., a characteristic species of the southern pine barrens, which in Torrey and Gray's Flora of North America (1840) was recorded with doubt from Delaware and which has lingered in our manuals since the first edition (1848) of Gray, as growing in Maryland. No material of the latter is in the Gray Herbarium from north of North Carolina and the species was not admitted by Shreve to the flora of Maryland. It should be dropped from northern floras until there is definite evidence of it north of the Carolinas.

Field experience in southeastern Virginia failed to reveal any *Rhexia aristosa;* but it was evident that the abundant material of *Rhexia* there could not be referred merely to the two Linnean species. In fact, we and, in 1934 Fernald and Long found no true *R. mariana* and the only *R. virginica* found was a very local area in 1934. The identification of our material has, therefore, led to a consideration of the entire genus. We are here presenting our conclusions regarding it within the "Manual range."

The subterranean habit is fundamental but all too rarely well displayed in herbarium specimens; the size and distribution of murications or processes on the seeds are apparently constant characters; so, too, is the relative length of the neck of the hypanthium. The two former characters are practically never mentioned in current treatments. Pubescence, breadth of leaf and color of flowers in our section of the genus are secondary.

The brilliantly reflecting or iridescent lustre of the seeds makes them difficult to bring out properly by photography. Consequently, Miss Ruth Peabody, of Radcliffe College, has kindly supplied us with drawings, × 50, of the seeds needed in clarifying the more northern species of the genus. The photographs show, besides the newly proposed species, the characteristic bases of *Rhexia virginica* (pl. 347, figs. 9–11), and of *R. mariana* (pl. 347, fig. 13), and, × 4, fruiting hypanthia of each of our species.

a. Leaves entire or only remotely serrate: calyx-lobes longer than neck of hypanthium; bristles of hypanthium not gland-tipped; petals aristate at apex: stem glabrous.....1. *R. aristosa.*

a. Leaves regularly serrulate: calyx-lobes shorter than to about equaling neck of hypanthium; bristles of hypanthium (when present) gland-tipped: petals not aristate-tipped: stems often more or less pubescent....*b.*

b. Tuberous rooted, the bases not forming horizontal, subligneous runners: seeds 0.65–0.8 mm. long.....2. *R. virginica.*

b. Non-tuberous, the bases consisting of tap-roots and horizontally spreading or creeping subligneous stolon-like stems: seeds 0.5–0.6 mm. long.

Neck of fruiting hypanthium longer than body: stems subterete, not obviously 4-angled.....3. *R. mariana.*
Neck of fruiting hypanthium as long as or shorter than body: stems 4-angled, especially above.
Mature hypanthium (excluding calyx-lobes) 7.5–10 mm. long, its body 4–5 mm. in diameter: seeds with low rounded pebbling, the surface appearing relatively uniform.....4. *R. interior.*
Mature hypanthium 9–14 mm. long, its body 5.5–8 mm. in diameter: seeds with prominent thin ridges and slender papillae.....5. *R. ventricosa.*

1. R. ARISTOSA Britton, Bull. Torr. Bot. Cl. xvii. 14, t. 99. (1890).—Very locally in pine barrens, New Jersey to Georgia. PLATE 347, FIG. 8.

2. R. VIRGINICA L. Sp. Pl. 346 (1753).—Georgia to Louisiana, north to Nova Scotia and locally inland to central and western New York, southern Ontario, Ohio, Indiana, Wisconsin and Missouri. Type studied by junior author. PLATE 347, FIGS. 1–4, PL. 346, FIG. 5.

In *Rhexia virginica* the hypanthium has the neck very much shorter than the body and the very papillose seeds are the largest in this section. The pubescence is very variable, some plants from as far north as Nova Scotia being as glabrous as the southern *R. stricta* Pursh, which has the seeds as small as in *R. mariana.* The base, when properly collected, is absolutely distinctive. PLATE 347, FIG. 1 shows a tuber, × 1, from a gravelly shore, FIG. 2 from moss, FIG. 3 from inundated peat.

3. R. MARIANA L. A somewhat polymorphic species, clearly distinguished among those with horizontally spreading subligneous bases (PLATE 347, FIG. 5), by its terete or subterete stems and the long necks of the fruiting hypanthiums. We recognize three varieties:

Var. **typica.** *R. mariana* L. Sp. Pl. i. 346 (1753). *R. mariana,* var. β. *rubella* Michx. Fl. Bor.-Am. i. 221 (1803).—Leaves lanceolate to elliptic, subglabrous to hirsute: petals pale-rose to whitish, 1.2–2 cm. long; seeds rather sharply muriculate.—Florida, northward on the coastal plain to Cape Cod, Massachusetts. Type examined by junior author. PLATE 346, FIG. 7.

Var. PURPUREA Michx. Fl. Bor.-Am. i. 221 (1803). *R. Nashii* Small, Fl. Se. U. S. 824, 1335 (1903).—Rather coarser throughout: leaves lanceolate, more generally villous-hirsute: petals deep-rose-color or purple, 1.5–2.5 cm. long: seeds with conspicuous pebbling.—Louisiana to Florida, north on the coastal plain to southeastern VIRGINIA: about Franklin, Southampton Co., *Heller,* no. 1115; Northwest, Norfolk Co., *Heller,* no. 727; wet peaty clearings in woods of *Pinus serotina,* south of Grassfield, Norfolk Co., *Fernald & Long,* no. 4065; shallow pools and wet peaty depressions in pineland, Cape Henry, *Fernald & Griscom,* no. 2859, *Fernald & Long* no. 4061; inundated swales back of dunes, south of False Cape, Princess Anne Co., *Fernald & Long,* no. 4067. PLATE 346, FIGS. 5 and 6.

Var. **leiosperma,** var. nov. (TAB. 346, FIG. 8), a var. *typica* recedit seminibus obsolete muriculatis, papillis depressis.—Louisiana and

Texas northward to Missouri, southern Illinois and southern Indiana. The following are referred here. INDIANA: sandy soil 2 miles west of Grand View, Spencer County, *Deam*, no. 16,654. ILLINOIS: wet grassy places, Metropolis, August 16, 1902, *Gleason*. KENTUCKY: Monkey's Eyebrow, Ballard Co., August 14, 1928, *W. A. Anderson*. TENNESSEE: open grassy swamp, Hollow Rock Junction, Carroll Co., *Svenson*, no. 419; gravelly oak woods, 6 miles east of Crossville, alt. 2300 feet, *Svenson*, no. 4146. MISSOURI: Dunklin Co. *Bush*, no. 42. ARKANSAS: Pulaski Heights, Little Rock, *Demaree*, no. 8128; Little Rock, June 21, 1885, *W. H. Manning*. LOUISIANA: meadows, near Alexandria, *Ball*, no. 618. TEXAS: Houston, May, 1883, *Lindheimer;* eastern Texas, *E. Hall*, no. 198; damp sandy soil, Montgomery Co., July 18–21, 1909, *R. A. Dixon*, no. 487 (TYPE in Gray Herb.); near Texarkana, Barrie Co., *Heller & Heller*, no. 4143.

Var. *leiosperma* has a range covering that of *Rhexia interior*. The latter species, however, has quadrangular stems, broader, round-based and essentially sessile leaves suggesting those of *R. virginica*, short neck of hypanthium and coarser seeds with more obvious pebbling.

4. R. INTERIOR Pennell, Bull. Torr. Bot. Cl. xl. 480 (1918), renaming of *R. latifolia* Bush, RHODORA xiii. 167 (1911), not Aubl. (1775).—Pond-shores, wet ground and prairies, Missouri. PLATE 346, FIG. 6, and PL. 347, FIG. 7.

5. R. **ventricosa**, n. sp. (TAB. 346, FIGS. 1–4), planta etuberifera, radice verticaliter descendente caulibus subligniis stoloniformibusque horizontaliter reptantibus; caulibus floriferis quadrangulatis 2.5–8 dm. altis plus minusve hispidis laxe ramosis ramis adscendentibus; foliis elliptico-lanceolatis vel anguste oblongo-ovatis sessilibus vel subsessilibus 2–6 cm. longis 0.7–2.3 cm. latis valde 3-costatis hispidis; hypanthiis plus minusve glanduloso-setosis maturis 9–14 mm. longis, basi ventricosis 5.5–8 mm. diametro in collum subaequantium producto; lobis calycis deltoideo-lanceolatis 2–3 mm. longis divergentibus; petalis purpureis 1.5–2 cm. longis; antheris flavis 8–9 mm. longis angustis basi appendiculatis, appendiculis 1–2 mm. longis; seminibus cochleiformibus 0.5–0.6 mm. longis longitudinaliter angusteque costatis, costis valde papillosis, papillis angustis subremotis.—Southeastern Virginia and eastern North Carolina. VIRGINIA: vicinity of Norfolk, September, 1906, *M. C. Jansen*, as *R. virginica;* border of gum swamp, Pungo Causeway near Land of Promise, Princess Anne Co., *Fernald & Griscom*, no. 2856; dry clay of open woods and thickets, north of Blackwater River, Princess Anne County, *Fernald & Long*, no. 4066; open clay at border of woods, east of Little Creek, Princess Anne County, July 31, 1934, *Fernald & Long*, no. 4064 (TYPE in Gray Herb.); wet roadside ditch near Princess Anne Courthouse, *Fernald & Griscom*, no. 2857; wet meadow near Pungo, Princess Anne County, *Fernald & Griscom*, no. 2858. NORTH CAROLINA: grassy roadside bank, 8 miles south of Williamstown, Martin Co., *Wiegand & Manning*, no. 2146, as *R. mariana:* open dry sandy field, 6 miles west of Greenville, Pitt Co., *Wiegand & Manning*, no. 2148 (mixed with *R. mariana*).

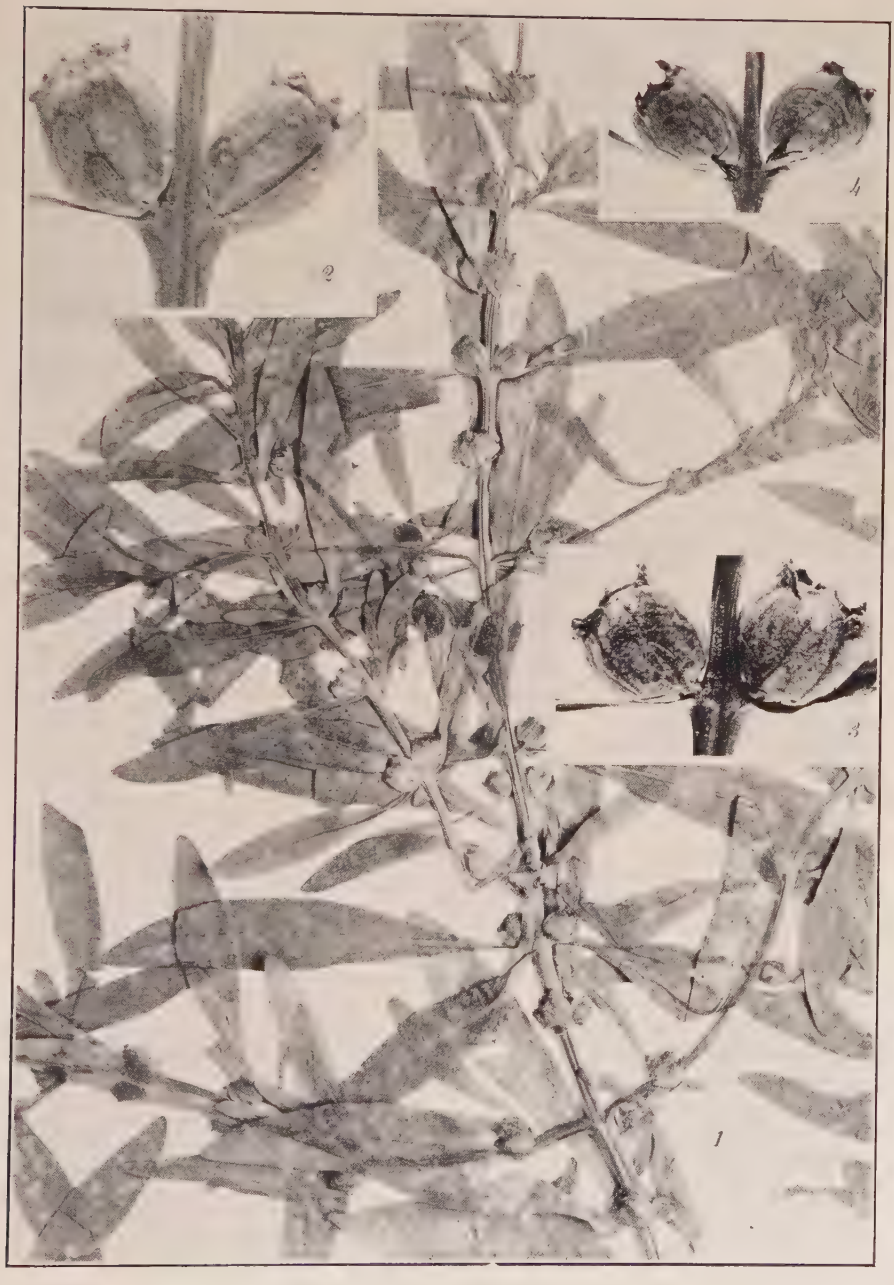

Photo. *E. C. Ogden*

ROTALA RAMOSIOR, VAR. INTERIOR: FIG. 1, portion of TYPE, × 1, from Tennessee; FIG. 2, fruit, × 5, from Ohio: FIG. 3, fruit (transitional), × 5, from Missouri.
R. RAMOSIOR (typical): FIG. 4, fruits, × 5, from Connecticut.

Photo. *E. C. Ogden*, drawings by *Ruth Peabody*.

RHEXIA VENTRICOSA: FIG. 1, TYPE, from Virginia, × ½; FIG. 2, fruiting hypanthium, × 4, from TYPE; FIG. 3, seeds, × 10 (by *J. F. Collins*) from Virginia; FIG. 4, seed, × 50, (from TYPE).

R. VIRGINICA: FIG. 5, seed, × 50, from Massachusetts.

R. INTERIOR: FIG. 6, seed, × 50, from Missouri.

R. MARIANA: FIG. 7, seed, × 50. from Massachusetts.

R. MARIANA, var. LEIOSPERMA: FIG. 8, seed, × 50, from Texas (TYPE).

Rhexia ventricosa superficially looks somewhat intermediate between *R. mariana* and *R. virginica*, but has a root system unlike either, a deep tap-root as in *R. virginica* but without the tubers which characterize that species, and horizontally spreading substoloniform branches (which occasionally develop slender stolons). Its stems are obviously square in section, but without the wing-angles of well developed *R. virginica* and the pubescence is sparser than in *R. mariana*. The leaves are somewhat intermediate in shape but without the distinct petiole and the well developed axillary fascicles of *R. mariana*. The flowers and fruits are nearly as in *R. mariana*, var. *purpurea* (*R. Nashii*) but the neck of the hypanthium is relatively short, and the calyx-lobes are nearly as long as the neck. The seeds lack a well developed dorsal crest and, under magnification, appear falsely alveolate from the deep shadows between the distinct or evenly spaced papillae.

The tendency of *Rhexia ventricosa* to prefer dryish or merely damp clay will be noted in the citation of specimens. In Princess Anne County we saw no *R. virginica*, though Fernald and Long got it in wet peat in a piece of pine barren in Norfolk Co., in 1934; and in both Princess Anne and Norfolk Counties *R. mariana*, var. *typica* seems to be wanting, its place there being taken by the southern var. *purpurea* (*R. Nashii*).

Rhexia ventricosa is, apparently, nearly related to *R. interior* Pennell: but it has a much larger hypanthium, with the ventricose body of greater diameter (whence the name), the calyx-lobes much larger and the papillae of the seeds slenderly columnar (in *R. interior* low and dome-like).

The Variations of Ludwigia sphaerocarpa (Plate 348). As currently interpreted *Ludwigia sphaerocarpa* Ell. Sk. Fl. S. C. and Ga. i. 213 (1821), of the southeastern coastal plain, extends northward to eastern Massachusetts and reappears in the isolated area of coastal plain types in northern Indiana. Our collection from Cape Henry, however, departs so definitely from the typical plant described by Elliott and, at the same time, is so unlike the plant with which we are familiar in Massachusetts, that it has seemed desirable to study the series with care. We find that the species breaks very naturally into four geographic trends.

Rameal leaves strongly reduced, glabrous or pubescent, lanceolate.
- Mature hypanthium small, 2.5–3.2 mm. long by 2.8–4 mm. broad, averaging broader than long.
  - Hypanthium only pubescent: glabrous leaves narrowly linear-lanceolate and attenuate. . . . . Var. *typica*.
  - Hypanthium, branches and leaves pubescent: leaves more broadly lanceolate, not attenuate. . . . . Var. *jungens*.
- Mature hypanthium larger, 3.5–4.6 mm. long, 3.2–4 mm. broad, averaging longer than broad. . . . . Var. *macrocarpa*.

Rameal leaves scarcely smaller than the primary ones, pubescent, narrowly oblong: stems pubescent: hypanthium pubescent, 3 mm. long, about as wide ..... Var. *Deamii*.

Var. **typica** (FIGS. 1 and 2). *L. sphaerocarpa* Ell. l. c. (1821).—Coastal plain, from Louisiana to Florida, north to North Carolina, rarely to Rhode Island. The following northern specimens have been seen: NEW JERSEY: Bennett, Cape May Co., August 29, 1922, *J. M. Fogg, jr.*, no. 359. NEW YORK: Southampton, Long Island, *St. John*, no. 2829. RHODE ISLAND: Worden's Pond, South Kingstown, Washington Co., August 16, 1930, *Anderson, Collins, Lownes & Weatherby*.

In var. *typica* the flowers are mostly remote on the elongate branches; the "*Leaves* 2 inches long, 2 lines wide, very acute, base also acute, glabrous"—Elliott.

Var. **jungens**, var. nov. (FIGS. 3 et 4), var. *typicae* simillima a qua differt ramis foliisque pubescentibus, foliis lanceolatis vix attenuatis.—Southeastern Virginia to southern New Jersey and eastern Pennsylvania. VIRGINIA: pool in sandy barrens, Cape Henry, September 23, 1933, *Fernald & Griscom*, no. 2862 (TYPE in Gray Herb., isotype in herb. Griscom; growing dominantly in pool with *Psilocarya scirpoides*, var. *Grimesii*—see p. 00). DELAWARE: Ellendale, September 1, 1892, *A. Commons* (mixed with *L. linearis*). PENNSYLVANIA: Bristol, *E. Diffenbaugh*. NEW JERSEY: Cold Spring, Cape May Co., *Gershoy*, no. 504; Hammonton, Atlantic Co., 1882, *F. L. Bassett*, and 1917, *Gershoy*, no. 505.

Var. **macrocarpa**, var. nov. (FIGS. 5 et 6), var. *typicae* simillima a qua differt foliis glabris latioribus lanceolatis acutis vix attenuatis; floribus plerumque approximatis vel subapproximatis; fructibus 3.5–4.6 mm. longis, 3.2–4 mm. latis.—New Jersey to southeastern New York and eastern Massachusetts. Seen from the following localities: NEW JERSEY: Quaker Bridge, Atlantic Co., September, 1867, *C. F. Parker;* Delanco, Burlington Co., *Hermann*, no. 3638. NEW YORK: Staten Island, September, 1879, *N. L. Britton;* Manor, Long Island, 1871, *E. S. Miller;* Peekskill, Westchester Co., *Browne;* Lake Mohegan, July 24, 1887, *J. W. Martens, jr.* CONNECTICUT: West Pond, North Guilford, numerous collections; Killingworth, *E. H. Eames*, no. 11,046. RHODE ISLAND: Cranston, Providence Co., August, 1907, *Thos. Hope*. MASSACHUSETTS: Fall River, August 15, 1913, *Sanford;* Lakeville, Plymouth Co., numerous collections (TYPE: stony shore of Quitacas Pond, Lakeville, August 27, 1899, *W. P. Rich* in Gray Herb.); Upper Waltham Pond, near Prospect Hill (locality probably destroyed), *Asa Gray;* common in Concord River from Bedford to Billerica, numerous collections.

Var. **Deamii**, var. nov. (FIGS. 7 et 8), ramis foliis fructibusque pubescentibus; foliis anguste oblongis, longioribus vix 4 cm. longis obtusiusculis, foliis ramulorum vix reductis; fructibus 3 mm. longis, 3 mm. latis.—INDIANA: low border of Lake Walker, northwest of

Baileytown, Porter Co., August 23, 1925, *C. C. Deam*, no. 42,350 (TYPE in Gray Herb.).

NOTES ON LUDWIGIA, § ISNARDIA (PLATE 349). In studying our material it became apparent that this section of *Ludwigia* was in need of revision. In the latest treatment, in Small's Manual, four species of *Isnardia* are recognized, based primarily on the length of the capsule. Concerning *L. spathulata* T. & G. we have nothing to add; it seems to be a unique species.

Another well known southern species is *Ludwigia natans* Ell. or *Isnardia natans* (Ell.) Kuntze. This now appears as *I. repens* (Sw.) DC., based on *L. repens* Sw. Fl. Ind. Occ. i. 273, t. 8 (1797), a name preoccupied by one of the North American representatives of *L. palustris* (L.) Ell., which was first recognized as differing from the European type as *L. repens* Forst. Cat. Pl. N. Am. 22 (1771). There prove to be two strong tendencies of *L. natans* in the southeastern United States and a third isolated in southern California. These are characterized in the following key.

Mature fruit (excluding calyx-lobes) 4–5.6 (–6) mm. long. *L. natans*, var. *typica*.
Mature fruit 6–10 mm. long, usually more tapering at base.
Fruit sessile or subsessile ..... Var. *rotundata*.
Fruit on distinct pedicels up to 4 mm. long ..... Var. *stipitata*.

L. NATANS Ell., var. **typica**. *L. natans* Ell. Sk. Bot. S. C. and Ga. i. 581 (1821). *Isnardia natans* (Ell.) Ktze. Rev. Gen. i. 251 (1891). *I. intermedia* Small & Alexander in Small, Man. Fl. Se. U. S. 940 or *I. media* Small & Alexander, l. c. 1506 (1933), illegitimate names under the International Rules as adopted at Cambridge until validated by a Latin diagnosis.—Florida to Texas, north, locally, to North Carolina, Tennessee and Missouri; also Bermuda. FIG. 2, fruit, × 4.

Var. **rotundata** (Griseb.), comb. nov. *Isnardia repens*, var. *rotundata* Griseb. Cat. Pl. Cub. 107 (1866). *L. repens* Sw. Fl. Ind. Occ. i. 273, t. 8 (1797), not Forst. (1771). *I. repens* (Sw.) DC. Prodr. iii. 60 (1828). *L. fluitans* Scheele, Linnaea, xxi. 580 (1848). *L. repens*, β. *rotundata* (Griseb.) Gomez, Anal. Hist. Nat. Madrid, xxiii. 66 (1894). FIG. 3, fruit, × 4.

The Grisebach type was the rather unusual aquatic state of the long-fruited variety with dilated leaves, whereas most specimens in the herbaria are of the terrestrial state, with narrower and firmer leaves. The variety occurs in Mexico, the Greater Antilles, Bermuda, and from Georgia and Florida to Texas.

Var. **stipitata**, var. nov. (FIGS. 1 et 4), var. *rotundifoliae* simillima a qua differt floribus fructibusque pedicellatis, pedicellis usque ad 4 mm. longis.—CALIFORNIA: San Bernardino, August, 1881, *S. B. & W. F. Parish*, no. 682 (TYPE in Gray Herb.); other collections from

the same region by *Parish Bros.* and by *G. R. Vasey*. Fig. 1, node, × 1; fig. 2, flower, × 4.

Ludwigia natans is most readily distinguished from the somewhat smaller *L. palustris* by its lacking the 4 longitudinal green bands on the hypanthium and by often having in their place 1 or more free or partly free long and narrow bractlets borne well above the base, the very short bractlet of *L. palustris*, when present, being basal.

There prove to be at least four strongly developed geographic trends in *Ludwigia palustris*, the typical Linnean plant being essentially European (extending slightly into western Asia and northern Africa). The four varieties may be distinguished as follows:

Longitudinal green bands of the hypanthium terminating well below the sinuses; body of fruit whitish and corky, 4–5.3 mm. long.....Var. *typica*.
Longitudinal green bands extending nearly or quite to the sinuses; body of the darker and less corky fruit 2–4.5 mm. long.
Mature hypanthium 2 (rarely 1.8)–3.5 mm. in diameter at the middle; calyx-lobes broadly deltoid.
Leaf-blades of terrestrial state long-petioled, subacute to short-pointed, broad: calyx-lobes scarcely acuminate...Var. *americana*.
Leaf-blades of terrestrial state short-petioled, usually acuminate and narrower: calyx-lobes acuminate.....Var. *pacifica*.
Mature hypanthium 1.4–2 mm. in diameter at the middle; calyx-lobes narrowly deltoid to broadly lanceolate, acuminate: leaves long-petioled.....Var. *nana*.

L. palustris (L.) Ell., var. **typica**. *Isnardia palustris* L. Sp. Pl. 175 (1753). *L. palustris* (L.) Ell. Sk. Fl. S. C. and Ga. 211 (1821), as to name-bringing synonym.—Europe and adjacent Asia and Africa. Fig. 7, fruit, × 4.

Var. **americana** (DC.), comb. nov. *Isnardia palustris*, β. *americana* DC. Prodr. iii. 61 (1828). *L. repens* Forst. Cat. Pl. N. Am. 22 (1771), not Sw. (1797). *L. apetala* Walt. Fl. Carol. 89 (1788). *L. nitida* Michx. Fl. Bor.-Am. i. 87 (1803). *I. ascendens* Hall in Eat. & Wr. N. Am. Bot. 285 (1840). *L. palustris*, var. *Liebmanni* Lévl. Bull. Geogr. Bot. xxii. 24 (1912).—Nova Scotia, New Brunswick and southern Quebec to Minnesota, south to Georgia, Louisiana and Texas; eastern Washington, eastern Oregon and northeastern California to Guatemala; also Bermuda. Fig. 8, fruit, × 4.

Var. **pacifica**, var. nov. (figs. 5 et 9), var. *americanae* simillima a qua differt foliis angustioribus lanceolatis vel anguste ellipticis, apice attenuatis breviter petiolatis; fructibus 2.8–3.4 mm. longis, 2.2–2.8 mm. latis, lobis calycis anguste deltoideis acuminatis.—Pacific Coast from Vancouver Island and western Washington to California. Type: gravelly shore, Sproat Lake, Vancouver Island, July 14, 1914, *W. R. Carter*, no. 128 (in Gray Herb.). Fig. 5, small plant of type collection, × 1; fig. 9, fruit, × 4.

Var. **nana**, var. nov. (figs. 6 et 10), var. *americanae* simillima a qua differt laminis foliorum longe petiolatis minoribus rare 2.5 cm. longis;

fructibus 2.2–3 mm. longis 1.4–2 mm. latis, lobis calycis anguste deltoideis vel late lanceolatis acuminatis.—Southern Georgia and Florida along the Gulf to Texas; also Cuba, Haiti, southeastern Mexico and Columbia. TYPE: Cameron, LOUISIANA, July 5, 1903, *S. M. Tracy*, no. 8718 (in Gray Herb.). FIG. 6, fruiting branch, × 1; FIG. 10, fruit, × 4.

Var. *nana* in its small fruits and leaves is the greatest departure from typical *L. palustris*. Whereas the foliage of the terrestrial and aquatic states is very different in the other varieties, the two states are barely distinguishable in var. *nana*.

PROSERPINACA PALUSTRIS AND ITS VARIETIES.—The plant of southeastern Virginia impressed us as somewhat unlike the more familiar variation in the North. This impression was due to the large, broad-faced and very thin-angled fruits, whereas the plant of wide range, from Nova Scotia to Wisconsin, south to the interior of Georgia and Oklahoma has smaller and more elongate fruits 2.3–4 mm. broad, with merely subacute angles, while an extreme variation of the interior, var. *amblyogona* Fern. RHODORA, xi. 120 (1909), has the angles strongly rounded or almost obsolete.

The plant with broad and thin-angled concave-sided fruits 4–6 mm. broad has been called *P. palustris*, var. *latifolia* Schindler in Engler, Pflanzenr. iv[225]. 76 (1905); also *P. platycarpa* Small, Bull. N. Y. Bot. Gard. iii. 432 (1905). Var. *amblyogona* has also been taken up as a species, *P. amblyogona* (Fern.) Small, Man. Se. Fl. 954 (1933). In their vegetative characters there are no constant differences and the fruits show many transitions. Geographically, many of the plants of the coastal plain area from New Jersey to Nova Scotia are clearly transitional between the commoner northern variation and that of the Southeast. Similarly in the interior, it is sometimes difficult to recognize var. *amblyogona*.

Most unfortunately, a study of the type in the Linnean herbarium, the material described as *Proserpinaca palustris* L. Sp. Pl. 88 (1753), proves it to be the southeastern broad-fruited extreme, the plant called by Schindler var. *latifolia*, by Small *P. platycarpa*. Five ripe fruits remained (1934) on the type and two of these are actually a little larger than the largest fruit on a reference sheet from Cape May, New Jersey. It, accordingly, becomes necessary to characterize the common northern plant as

PROSERPINACA PALUSTRIS L., var. **crebra**, var. nov., fructibus minoribus 2.3–4 mm. latis, angulis subacutis nec alatis.—Nova Scotia to Wisconsin, south to Georgia and Oklahoma. TYPE:

Hampton, New Hampshire, August 31, 1902, *E. F. Williams* (in Gray Herb.).

Ipomoea hederacea (L.) Jacq., var. integriuscula Gray. Virginia: roadside bank, Back Bay, Princess Anne Co., no. 2877.

Cited by Small under *Pharbitis barbigera* (Sims) G. Don, only north to Georgia. The fresh flowers were bright azure-blue; in the dried material they have faded to reddish-pink.

Lippia lanceolata Michaux. Michaux described *L. lanceolata* "foliis lineari-lanceolatis" from the Ashley River, South Carolina. Nevertheless, the species, given a broad inland range, was described by Gray with leaves "varying from obovate and lanceolate-spatulate to ovate" and with the special comment "name therefore inapt." Gray's impression was due to the fact that in his day there was no material in the Gray Herbarium (at least) of the narrower-leaved plant which Michaux had accurately described (plate 350, fig. 1). We now know the narrow-leaved extreme as a plant of the outer coastal plain, from Cape May, New Jersey to South Carolina and Louisiana. The wide-ranging broad-leaved extreme seems to have no available name and we, therefore, call it

Lippia lanceolata Michx., var. **recognita**, var. nov. (tab. 350, fig. 2), foliis obovatis vel late lanceolato-spathulatis vel anguste ovatis.—Type: swampy places, Fremont Co., Iowa, July 30, 1898, *T. J. Fitzpatrick* in Gray Herb. Eastern Pennsylvania to southern Ontario, Iowa and Nebraska, south to Florida, Louisiana, Texas and adjacent Mexico.

Physalis maritima M. A. Curtis. Virginia: sand hills, Cape Henry, no. 2885.

Physalis maritima is the maritime plant, with elliptic or oblong and obtuse stellate-puberulent leaves attenuate to the short petiole, which is included in the North American treatments under *P. viscosa* L. The latter species was based, however, both by Linnaeus and Gronovius (before him) on a plant described and excellently illustrated by Dillenius from Buenos Aires, with cordate leaves. Abundant material from Argentina and adjacent countries well represents *P. viscosa*, which has nothing to do with the plant of coastal sands of our southeastern states.

The ascription of *Physalis viscosa* of American authors to "Virginia" goes back to Gronovius, who, obviously, had something else in hand.

Galium tinctorium L., var. floridanum Wieg. Virginia: brackish marsh, Pungo Ferry, Princess Anne Co., no. 2890.

Although Wiegand cited this variety only from Florida, our material is a perfect match for the type-collection.

EUPATORIUM CUNEIFOLIUM Willd., var. **semiserratum** (DC.), comb. nov. *E. semiserratum* DC. Prodr. v. 177 (1836).

We are unable to find any characters in the involucres, corollas and achenes by which to keep *E. semiserratum* specifically apart from *E. cuneifolium*. The extreme difference in leaf-outline and degree of toothing is marked but many transitional specimens occur.

EUPATORIUM ROTUNDIFOLIUM AND ALLIES. Long field experience with *Eupatorium rotundifolium* and the plants associated with it as related species, in many parts of their range, has convinced us that extensive modification of the present specific concept is necessary, if we are to interpret correctly the highly variable mass of material. As currently treated, the series *Rotundifoliae* consists of *E. sessilifolium* L., a glabrous plant with obtuse or obtusish involucral bracts and very long-acuminate, finely serrate leaves with strongly rounded to truncate, closely sessile bases; and, set off from this usually clear-cut species, another group, *E. rotundifolium* L., *E. pubescens* Muhl., *E. scabridum* Ell. and *E. verbenaefolium* Michx., characterized by acute to attenuate inner bracts and shorter, thicker and pubescent blunt or merely acute leaves, with coarser and blunter toothing. These four prove to be bewilderingly variable in shape, size and toothing of the leaves; and search for more stable characters has led us to the conclusion that the treatment of Asa Gray in the Synoptical Flora was correct, *E. scabridum* and *E. pubescens* being reduced to varietal rank under *E. rotundifolium*. We should go further and unite with them *E. verbenaefolium* of current treatments (*E. teucrifolium* of the Synoptical Flora). *E. sessilifolium* has the tube of the corolla nearly equaling the throat (as in *E. hyssopifolium*), while all the others agree in having the tube much shorter than the throat. In every other character extreme specimens in both groups definitely converge.

Eupatorium sessilifolium is primarily a species of rich or calcareous areas and is unknown on the typical sandy and acid soils of the coastal plain, where the others are dominant. It is ordinarily very distinct from the other four, separated by the characters noted above; but from Maryland and the District of Columbia inland to the mountains of Virginia, West Virginia and Tennessee a remarkable extreme is dominant, which entirely lacks the characters conventionally ascribed to the species, except in having the corolla of *E. sessilifolium*. The stem of this plant is densely cinereous-puberulent; both surfaces of the leaves are often similarly and densely puberulent; and the

leaves are shorter, broadly ovate to ovate-lanceolate and acute, but never with the long acumination characteristic of typical glabrous *E. sessilifolium*. This plant, has consequently, been distributed by collectors either as *E. sessilifolium ?*, *E. pubescens* or a hybrid of the two; and it was described as *E. Vaseyi* by Porter, Bull. Torr. Bot. Cl. xix. 128 (1892). Having the distinctive corolla of *E. sessilifolium*, this plant is evidently a well defined variety of that species. The type, from Lookout Mt., Tennessee, kindly loaned by Dr. Maxon to Dr. Robinson, is before us as we write. The other specimens examined by us are enumerated below, under

E. SESSILIFOLIUM L., var. **Vaseyi** (Porter), comb. nov. *E. Vaseyi* Porter, Bull. Torr. Bot. Cl. xix. 128 (1892). MARYLAND: dry woods between Quantico and Salisbury, *Tidestrom*, no. 7427. DISTRICT OF COLUMBIA: in vicinis Washington, September 30, 1877, *L. F. Ward;* Brooklands, September 1, 1895, *Holm;* thickets, September 11, 1896, *Steele*. VIRGINIA: The Pinnacle, Lee Co., July 27, 1892, *Small;* Halifax, August, 1927, *Wm. Rhoades;* Bedford Co., August 31, 1871, *A. H. Curtiss;* Craigs, Craig Co., *Steele*, no. 21; dry rocky woods along Potto Creek, 7 miles from Covington, Alleghany Co., *Griscom*, no. 18,780. WEST VIRGINIA: Dailey's Post Office, Jefferson Co., *Wm. Palmer*, no. 49; dry roadside thicket, Upshur Co., *S. S. Dickey*, no. 156.

The other four so-called "species" prove to have no constant or fundamental characters separating them. The plants currently called *E. verbenaefolium* and *E. rotundifolium* are two well marked extremes, but *E. pubescens* is a hopeless series of leaf variations, containing every possible connecting stage between these two extremes in outline. Indeed, unrecorded variations have membranaceous and smooth, instead of thick and rough, leaves; while occasional plants have obtusish rather than acutish bracts. Eighty per cent of the plants growing west of or outside of the coastal plain belong to this intermediate series, and field experience is required to understand their distribution. Thus, in the Shenandoah valley and in the Alleghanies of Virginia and West Virginia, one of the surprises of local work is the presence of coastal plain species in limestone barrens or sandy valleys, with the rich piedmont flora flourishing on the wooded hillsides a hundred yards away. No hint of this situation can be found on the labels of older collections.

There are also difficulties in nomenclature. The available names are nearly all specific; they are old names and the types, all in European herbaria, have never been critically discussed by a person familiar with the genus today. Photographs of nearly all of them are now in the Gray Herbarium, thanks to the interest of Dr. Robinson, who

Photo. *E. C. Ogden*

RHEXIA VIRGINICA, bases of plant, × 1: FIG. 1, from gravel; FIG. 2, from moss; FIG. 3, from bog; FIG. 4, fruiting hypanthium, × 4, from West Virginia.

R. MARIANA, var. PURPUREA: FIG. 5, base of plant, × 1, from Virginia; FIG. 6, fruiting hypanthium, × 4, from Mississippi.

R. INTERIOR: FIG. 7, fruiting hypanthium, × 4, from Missouri.

R. ARISTOSA: FIG. 8, fruiting hypanthium, × 4, from Georgia.

Photo. *E. C. Ogden.*

VARIETIES OF LUDWIGIA SPHAEROCARPA; habit, × 1; fruit, × 4.
Var. TYPICA: FIGS. 1 and 2, from Georgia.
Var. JUNGENS: FIGS. 3 and 4, from Delaware.
Var. MACROCARPA: FIGS. 5 and 6, from Massachusetts (TYPE).
Var. DEAMII: FIGS. 7 and 8, from Indiana (TYPE).

Photo. *J. F. Collins.*

LUDWIGIA, § ISNARDIA; branches, × 1; fruits, × 4.
L. NATANS, var. TYPICA: FIG. 2, from Florida.
L. NATANS, var. ROTUNDATA: FIG. 3, from Texas.
L. NATANS, var. STIPITATA: FIGS. 1 and 4, from California.
L. PALUSTRIS, var. TYPICA: FIG. 7, from Russia.
L. PALUSTRIS, var. AMERICANA: FIG. 8, from Massachusetts.
L. PALUSTRIS, var. PACIFICA: FIGS. 5 and 9, from Vancouver Island (TYPE).
L. PALUSTRIS, var. NANA: FIG. 6, from Florida; FIG. 10, from Louisiana (TYPE).

Photo. *E. C. Ogden.*

LIPPIA LANCEOLATA: FIG. 1, flowering branch, × 1, from Virginia.
L. LANCEOLATA, VAR. RECOGNITA: FIG. 2, flowering branch, × 1, from Iowa (TYPE).

has most kindly placed them at our disposal. Their study makes it quite impossible to endorse current stereotyped usage in several cases. A summary of these types is given below.

E. ROTUNDIFOLIUM L. = *E. rotundifolium* as currently understood.
E. VERBENAEFOLIUM Michx. = *E. pubescens* as currently understood.
E. TEUCRIFOLIUM Willd. = *E. pubescens* as currently understood.
E. PUBESCENS Muhl. = *E. pubescens* as currently understood.
E. LANCEOLATUM Muhl. in Willd., of which we have seen no photograph but of which Muhlenberg's own material is preserved at the Academy of Sciences of Philadelphia, is clearly the narrow-leaved extreme of *E. verbenaefolium* as currently understood, and Asa Gray was quite correct in citing it under his *E. teucrifolium*, not the *E. teucrifolium* of Willd.

Those who wish to maintain these three "species" must determine the identity of Walter's *E. pilosum* and *E. Marrubium* to settle the nomenclature. We cannot interpret *E. Marrubium* any better than Asa Gray, but *E. pilosum* is obviously either the *E. pubescens* or *E. verbenaefolium* of current manuals and is a far older name than either. We do not settle the identity of these Walter types, as we do not regard these plants as species and are consequently solely concerned with varietal names. We recognize the following varieties:

E. ROTUNDIFOLIUM L., var. **typicum**. *E. rotundifolium* L. Sp. Pl. 837 (1753).—Leaves suborbicular to broadly deltoid-ovate, relatively small, the middle ones 2–5.5 cm. long, nearly as broad as long, usually strongly canescent on both surfaces; the rounded to subacute teeth relatively uniform; uppermost leaves very rarely alternate (in only 3 out of 65 sheets examined).—Passing freely into

Var. OVATUM (Bigelow) Torrey in DC. Prodr. v. 178 (1836). *E. ovatum* Big. Fl. Bost. ed. 2: 296 (1824). *E. pubescens* Muhl. in Willd. Sp. Pl. iii. 1755 (1804).—Leaves often less pubescent, in extreme cases thinner and glabrate, with coarser toothing; lower and median ovate to elliptic or broadly oblong, obtuse to subacute; the middle ones 4–10 cm. long; uppermost leaves rarely alternate (in 13 out of 74 examined).

Var. SCABRIDUM (Elliott) Gray, Syn. Fl. i.^{2} 99 (1884). *E. scabridum* Ell. Sk. ii. 298 (1821–24).—Stems puberulent; leaves scabrous-puberulent, rhombic-ovate, often cuneate at base, the larger 3–6.5 cm. long, the toothing much as in var. *typicum;* uppermost cauline leaves rarely alternate (in 4 out of 23).

Var. **lanceolatum** (Muhl.), comb. nov. *E. lanceolatum* Muhl. ex Willd. Sp. Pl. iii. 1752 (1804). *E. verbenaefolium* of recent authors, not Michx. *E. teucrifolium* of recent authors, not Willd.—Lower and middle leaves narrowly lance-ovate to elliptic-oblong, obtuse to acute; the median 4–9 cm. long, with relatively few, coarse teeth, the lower teeth often prolonged; uppermost leaves narrowly ovate to lanceolate, acute to acuminate, usually alternate (in 68 out of 78); pubescence and texture much as in var. *ovatum*.

Eupatorium perfoliatum L., var. **colpophilum**, var. nov., a forma typica differt caulibus glabratis vel puberulis; foliis glabrescentibus angustioribus 0.6–2.5 cm. latis; involucris glabrescentibus nec non dense pilosis.—Tidal flats of the St. Lawrence River, Quebec and the Kennebec-Androscoggin system, Maine. The following (all collections seen from these estuaries) belong here. Quebec: Berthier, Montmagny Co., July 14, 1922, *Fernald & Pease*, no. 25,296; Berthier, August 13, 1925, *Rousseau*, no. 21,300 (type in Gray Herb.); St. Augustine, Portneuf Co., August 7, 1923, *Svenson & Fassett*, nos. 2050 and 2051 (individual with 3 leaves); Beauport, August 8, 1922, *Victorin*, no. 15,347. Maine: Bowdoinham, September 14 and 19, 1916, *Fernald & Long*, no. 14,650; Bowdoinham, August 24, 1921, *Fassett*, nos. 343–346.

Much of the Maine material has been referred to forma *purpureum* Britton, because of the purplish involucres and flowers. Forma *purpureum*, however, is a purplish-flowered form of typical *E. perfoliatum*, with densely pilose involucre and pubescent leaves. Var. *colpophilum* was detected by us while studying the variations of *E. perfoliatum* in our Virginia collections. The species is very variable and we feel, after going over much material, that var. *truncatum* (Muhl.) Gray (*E. truncatum* Muhl.) is not a true variety or anything but an occasional aberration. *E. cuneatum* Engelm. (*E. perfoliatum*, var. *cuneatum* Engelm.), however, with campanulate heads and short round-tipped involucral bracts is apparently a distinct species, nearly related to the local *E. resinosum* Torr. of pine barrens of New Jersey and Delaware.

Liatris graminifolia Willd., var. **Smallii** (Britton), comb. nov. *Laciniaria Smallii* Britton, Man. 927 (1901). Virginia: dry oak woods, The Desert, Cape Henry, no. 2907.

Our material, growing with other typical Alleghenian plants in comparatively rich woods, is a perfect match for the type-collection of *Laciniaria Smallii*, from Iron Mountain, Smyth Co. A well defined variety on account of its comparatively open inflorescence, often with peduncled heads, and its often broad lower leaves, the plant seems to have no satisfactory characters to separate it specifically from *Liatris graminifolia*. Var. *Smallii* is a characteristic plant of the Alleghenies from southwestern Virginia to Georgia and Tennessee. Its discovery at Cape Henry adds another to the considerable list of Alleghenian types isolated there.

In studying the variations of *Liatris graminifolia* one other variety has seemed to us specially worthy of note. This is the hirsute plant, dominant near the northern end of the range of the species, in New

Jersey, and occurring locally southward to Florida. This is the plant which was apparently intended as *Laciniaria graminifolia pilosa* by Britton, as indicated by the description and range given in his Manual, 927 (1901). The combination, first made by Britton (Mem. Torr. Bot. Cl. v. 314) in 1895, rested, however, directly upon *Serratula pilosa* Ait. Hort. Kew, iii. 138 (1789) and was supposed to cover also *Liatris graminifolia*, var. *dubia* (Barton) Gray. As to *Serratula pilosa*, Aiton's description was brief but very definite: "S. foliis linearibus pilosis, floribus axillaribus longe pedunculatis." The second phrase alone should indicate that Aiton had something quite unlike *Liatris graminifolia*, which has the heads sessile or on peduncles shorter than the involucres. Fortunately fragments of a head from Aiton's type, long ago presented to Asa Gray, are before us. These show the involucral bracts to be linear and acute, thus proving conclusively that *Serratula pilosa* has nothing to do with *Liatris graminifolia*.

Liatris dubia Bart., to which Gray doubtfully referred *Serratula pilosa*, is, as shown by Barton's plate and description, suggestive of Aiton's plant but, again, cannot be closely related to *Liatris graminifolia*.

Liatris graminifolia Willd. Sp. Pl. iii. 1636 (1804), itself was a mixture at the start. Willdenow gave an original diagnosis which is clearly recognizable; but he derived the name from Walter's *Anonymos graminifolius*, Fl. Car. 197 (1788). The latter, however, was described as 6 feet (1.8 m.) high, a measurement seemingly impossible for our plant. Since, however, Willdenow's account contained an original diagnosis and a more detailed original description of a specimen actually before him, we are leaving *Liatris graminifolia* as Willdenow's species.

The hirsute plant should be called

L. GRAMINIFOLIA Willd., var. **lasia**, var. nov., foliis hirsutis; caule plus minusve hirsutis. TYPE: dry sandy soil, Lindenwold, Camden Co., NEW JERSEY, September 29, 1923, *J. M. Fogg, jr.*, no. 622 (in Gray Herb.). Frequent in southern New Jersey and locally southward on the outer coastal plain to Florida. Our collection from Virginia is from dry sandy barrens, Cape Henry, no. 2909, growing with typical *L. graminifolia* (no. 2908).

ASTER SUBULATUS Michx., var. **euroauster**, var. nov. (TAB. 251, FIGS. 1 et 3), capitulis plerumque dissitis vix glomerulatis; involucris 5–7 mm. longis; bracteis scariosis lineari-attenuatis; foliis plerumque anguste linearibus.—Brackish to fresh wet places, eastern Massachusetts to Florida; inland near Syracuse, New York; chiefly southern.

Type: border of gum swamp near North Landing, Norfolk Co., Virginia, September 22, 1933, *Fernald & Griscom*, no. 2919 (in Gray Herb.; isotype in herb. Griscom).

Typical *Aster subulatus* Michx. Fl. Bor.-Am. ii. 111 (1803) is the plant common on salt marshes and brackish shores from New Hampshire to Delaware, the whole plant often suffused with purple, the slightly larger heads (6–8 mm. long) tending to become crowded and subsessile (fig. 2), the bracts herbaceous and lance-linear, the basal and cauline leaves tending to lanceolate rather than narrowly linear. Var. *euroauster* is far more characteristic of brackish tidewater or even fresh habitats northward, whereas typical *A. subulatus* is most characteristic of open salt marshes.

According to Gray (Synoptical Flora), *Aster subulatus* of Michaux was a mixture of *A. exilis* Ell. from "Carolinae" and *A. subulatus* in our sense from "Pensylvaniae." Gray, as the first reviser of the tangle, took up the latter element as typical *A. subulatus* and his notations on the sheets which were before him indicate the coarser salt marsh plant of the North as true *A. subulatus;* while two sheets from Florida of var. *euroauster* were marked "a slender Florida form."

Iva frutescens L., var. **oraria** (Bartlett), comb. nov. *I. oraria* Bartlett, Rhodora, viii. 26 (1906).

The plants of marshes in Princess Anne Co., like specimens from Cape Charles, have the leaves nearly as in *I. oraria*, but the smaller and more subsessile heads of *I. frutescens*. The achenes might go with material of either extreme. A transitional series, combining in varying degrees the foliage and the involucres and achenes of the two, extends from southeastern Virginia to Cape May. North of southern New Jersey the larger-headed and broader-leaved var. *oraria* alone seems to be found; south of Virginia the material is all the narrow-leaved and usually smaller-headed typical *I. frutescens*.

Ambrosia artemisiaefolia and its Variations in temperate eastern North America. The polymorphous annual weed, well known to every one as Ragweed or Bitterweed, consists of many trends, which in the North American Flora are treated by Rydberg as about 10 species. Without venturing on a final decision regarding the status of some of these, it is clear to us that in the northeastern United States and adjacent Canada all the variations belong to one specific type. We should classify them as follows:

Leaves simple, coarsely pinnatifid or rarely bipinnatifid; staminate involucres 3–7 mm. broad. . . . . *A. artemisiaefolia* (typical).

Leaves bi- to tripinnatifid, with smaller segments: staminate involucres 1.5–5 mm. broad.
Staminate involucre 2.5–5 mm. broad.
Plant glabrous or appressed-pubescent.....Var. *elatior*.
Plant spreading-villous.....Var. *elatior*, f. *villosa*.
Staminate involucre 1.5–2.5 mm. broad.....Var. *paniculata*.

A. ARTEMISIAEFOLIA L. Sp. Pl. ii. 988 (1753); Rydb. N. Am. Fl. xxxiii. 18 (1922).—Sea-beaches and cultivated or waste land, Magdalen Islands and Nova Scotia to Pennsylvania and (acc. to Rydberg) District of Columbia.

Var. ELATIOR (L.) Descourtils, Fl. Ant. i. 239, t. 55 (1821). *A. elatior* L. l. c. (1753); Rydb. l. c. (1922).—Ubiquitous weed of United States and southern Canada, extending to the West Indies and naturalized in Europe.—*A. media* Rydb. Bull. Torr. Bot. Cl. xxxvii. 127 (1910) seems to us only a stiffish inland phase of var. *elatior;* and *A. glandulosa* Scheele, Linnaea, xxii. 157 (1849) and *A. diversifolia* (Piper) Rydb. N. Am. Fl. l. c. (1922) seem hardly recognizable.

Forma **villosa**, f. nov., var. *elatiori* similis sed caulis foliisque plus minusve villosis, villis divergentibus.—Prince Edward Island to Oregon and southward. TYPE: Fayette, IOWA, August, 1894, *Bruce Fink* in Gray Herb.

Var. PANICULATA (Michx.) Blankinship, Rep. Mo. Bot. Gard. xviii. 173 (1907). *A. paniculata* Michx. Fl. Bor.-Am. ii. 183 (1803). *A. monophylla* Walt. Fl. Carol. 232 (1788).—Southeastern United States, north, locally, as a weed to Massachusetts, New Hampshire and New York.

It is possible that there is an earlier valid varietal name, but var. *paniculata*, based upon *A. paniculata*, is definite; other names, like var. *jamaicensis* Griseb. Fl. Brit. W. Ind. 370 (1861), based merely on the cutting of the leaf are not clearly identifiable.

HIERACIUM GRONOVII L., var. FOLIOSUM Michx. VIRGINIA: dry oak woods, Cape Henry, nos. 2934, 2935.

Hieracium Gronovii L. has two strong varietal tendencies. Typical *H. Gronovii*, as determined by Asa Gray, on comparing the Clayton (Gronovian) specimen, is equivalent to var. *nudicaule* Michx. Fl. Bor.-Am. ii. 87 (1803) and includes var. *subnudum* Torr. & Gray, Fl. ii. 477 (1843). This plant has the larger leaves subbasal as in *H. venosum* or extending remotely up the lower third of the stem and rarely more than 4 or 5 in number. Its inflorescence is open and varying from thyrsoid-cylindric to almost corymbose. The latter plants strongly simulate *H. venosum* but can always be distinguished from it by the markedly fusiform or upwardly attenuate achenes and by the stouter and more heavily glandular pedicels.

Var. *foliosum*, which is clearly an earlier name for the plant described as var. *hirsutissimum* Torr. & Gray, l. c. (1843) and as *H.*

pensilvanicum Fries Symb. Hierac. 150 (1844), has numerous cauline leaves extending nearly or quite into the inflorescence, more oval and rounded at summit, the panicle slenderly cylindric-ellipsoid and commonly 2–7 dm. long. It is dominant on the coastal plain, extending rather rarely into southern New England and northward in the interior to southern Indiana and Missouri; whereas typical *H. Gronovii* predominates northward and in the interior.

EXPLANATION OF PLATES 332–351

PLATE 332. JUNIPERUS VIRGINANA L.: FIG. 1, adult foliage, × 10, from Tower Rock, Missouri, *Gleason*, no. 1778; FIG. 2, foliage and fruit, × 10, from Nimmo, Virginia, *Fernald & Griscom*, no. 2703; FIG. 3, foliage, × 10, from Cedar Cliff Mt., Buncome Co., North Carolina, *Biltmore Herb.*, no. 2624; FIG. 4, foliage, × 10, from Waynesboro, Tennessee, *Svenson*, no. 4308 (transition to var. *crebra*); FIG. 5, seed, × 10, from Tower Rock, Missouri, *Gleason*, no. 1778; FIG. 6, seed, × 10, from Cliff Mt., North Carolina, *Biltmore Herb.* no. 2624; FIGS. 7 and 8, seeds, × 10, from same no. as FIG. 2; FIG. 9, seed, × 10, from Tennessee, *Svenson* no. 4308 (transition to var. *crebra*).

PLATE 333. JUNIPERUS VIRGINIANA, var. CREBRA, n. var.: FIG. 1, adult foliage, × 10, from McCall's Ferry, Pennsylvania, *Heller & Halbach*, no. 705; FIG. 2, foliage, × 10, from Barnstable, Massachusetts, *Fernald & Long*, no. 17,797 (TYPE); FIG. 3, foliage, × 10, from Fairfield, Connecticut, October 1, 1899, *E. H. Eames;* FIG. 4, foliage, × 10, from West Fort Anne, New York, November 12, 1895, *S. H. Burnham;* FIG. 5, seed, × 10, from Pennsylvania, *Heller & Halbach*, no. 705; FIG. 6, seed, × 10, from Fairfield, Connecticut, *Eames;* FIG. 7, seed, × 10, from West Fort Anne, New York, *Burnham;* FIG. 8, seed, × 10, from Massachusetts, *Fernald & Long*, no. 17,797 (TYPE).

PLATE 334. CINNA ARUNDINACEA L.: FIG. 3, spikelets, × 12, from the type region, environs de Montréal, *Victorin*, no. 28,445.

C. ARUNDINACEA, var. INEXPANSA, n. var.: FIG. 1, panicle, × 1, from North Landing, Norfolk Co., Virginia, *Fernald & Griscom*, no. 2732; FIG. 2, spikelets, × 12, from no. 2732.

C. LATIFOLIA (Trev.) Griseb.: FIG. 4, spikelets, × 12, from Grand Falls, Newfoundland, *Fernald & Wiegand*, no. 4586.

PLATE 335. ARISTIDA LANOSA Muhl. var. MACERA, n. var.: FIG. 2, plant, × ½, from Cape Henry, Virginia, *Fernald & Griscom*, no. 2719 (TYPE); FIG. 1, lemma, × 2, from no. 2719.

PLATE 336. ECHINOCHLOA PUNGENS (Poir.) Rydb., var. COARCTATA, n. var.: FIG. 1, panicle, × 1, from Pungo Ferry, Princess Anne County, Virginia, *Fernald & Griscom*, no. 2760 (TYPE); FIG. 2, spikelet, × 10, from no. 2760.

E. PUNGENS, var. LUDOVICIANA (Wieg.) Fern. & Grisc.: FIG. 3, spikelet, × 10, from Baton Rouge, Louisiana, *Billings*, no. 14 (TYPE).

PLATE 337. VARIATIONS OF ANDROPOGON VIRGINICUS L., panicles × ½: FIG. 1, A. VIRGINICUS (GENUINUS), from Newport, Delaware, Sept. 30, 1899, *W. M. Canby;* FIG. 2, var. GLAUCUS Hackel, from Okeechobee region, Brevard Co., Florida, *Fredholm*, no. 6121; FIG. 3, var. TETRASTACHYUS (Ell.) Hackel., from Jacksonville, Florida, *A. H. Curtiss.* no. 5571; fig. 4, var. GLAUCOPSIS (Ell.) Hitchc., from Apalachicola, Florida, *Biltmore Herb.* no. 921 a.

PLATE 338. VARIATIONS OF ANDROPOGON VIRGINICUS, panicles × ½: FIG. 1, var. TENUISPATHEUS (Nash) Fern. & Grisc., from near St. Petersburg, Florida, *C. C. Deam*, no. 1886; FIG. 2, var. CORYMBOSUS (Chapm.) Fern. & Grisc., from Florida, 1884, *A. H. Curtiss;* FIG. 3, var. ABBREVIATUS (Hack.) Fern. & Grisc., from Hammonton, New Jersey, *Gershoy*, no. 30.

PLATE 339. VARIATIONS OF ANDROPOGON SCOPARIUS Michx., racemes × 2, habits × ½: FIG. 4, A. SCOPARIUS (GENUINUS), from Florida, *Chapman:* FIG. 3, var. FREQUENS Hubbard, from Block Island, Rhode Island, *Fernald,*

Long & Torrey, no. 8476 (TYPE); FIGS. 1 & 2, var. SEPTENTRIONALIS, n. var., from Baie Sherley, Riv. Ottawa, Quebec, *Rolland-Germain*, no. 19,199 (TYPE); FIG. 5, var. NEO-MEXICANUS (Nash) Hitchc., from Cedar Point, Erie Co., Ohio, *R. J. Webb*, no. 5503.

PLATE 340. VARIATIONS OF ANDROPOGON SCOPARIUS, racemes × 2, habit × ½: FIGS. 1 & 2, var. DUCIS, n. var., from Naushon, Dukes Co., Massachusetts, *Fogg*, no. 2940 (TYPE); FIG. 3, var. DIVERGENS Hackel, from Braidentown, Florida, *Combs*, no. 1298 (type of var. *polycladus* Scribn. & Ball); FIG. 4, var. LITTORALIS (Nash) Hitchc., from Cape Henry, Virginia, *Fernald & Griscom*, no. 2768.

PLATE 341. CYPERUS STRIGOSUS L., umbels × 1: FIG. 1, TYPE in Herb. Linnaeus (from photograph sent by Mr. S. SAVAGE, Assistant Secretary of the Linnean Society of London); FIG. 2, Texas, *Drummond*, no. 287 (ISOTYPE of *C. uniflorus* Torr. & Hook.); FIG. 3, west of San Antonio, Texas, *E. Palmer*, no. 2018 (as *C. uniflorus*); FIG. 4, Auburn, Maine, August 18, 1888, *J. C. Parlin;* FIG. 5, Placerville, California, *Bolander*, no. 6224 (as *C. stenolepis* [Wats., not] Torr. = *C. Hansenï* Britton); FIG. 6, Agricultural College, Mississippi, August 24, 1889, *F. S. Earle;* FIG. 7, Adams, Massachusetts, *M. A. Day*, no. 37.

PLATE 342. CYPERUS RETRORSUS Chapm., var. TYPICUS: FIG. 1, inflorescence, × 1, from High Springs, Florida, *Wiegand & Manning*, no. 466 (distributed as *C. cylindricus*), a close match for Chapman's type; FIG. 2, spike, × 4, from no. 466.

C. RETRORSUS, var. NASHII (Britton) Fern. & Grisc.: FIG. 3, part of inflorescence, × 1, from Eustis, Lake Co., Florida, *Nash*, no. 1196 (ISOTYPE of *C. Nashii*); FIG. 4, spike, × 4, from no. 1196.

C. RETRORSUS, var. CYLINDRICUS (Ell.) Fern. & Grisc.: FIG. 5, inflorescence, × 1, from Middle Oconee River, Clarke Co., Georgia, *Harper*, no. 100; FIG. 6, spike, × 4, from no. 100.

C. RETRORSUS, var. DEERINGIANUS (Britton & Small) Fern. & Grisc.: FIG. 7, portion of inflorescence, × 1, from near Great Bridge, Norfolk Co., Virginia, *Fernald & Long*, no. 3725; FIG. 8, spike, × 4, from no. 3725.

PLATE 343. CYPERUS FILICULMIS Vahl, var. OBLITUS, n. var.: FIG. 1, inflorescence, × 1, from Cape Henry, Virginia, *Fernald & Griscom*, no. 2793 (TYPE); FIG. 2, glomerule, × 2, from TYPE.

C. FILICULMIS, var. MACILENTUS Fernald: inflorescence, × 2, from Orono, Maine, *Fernald*, no. 343 (TYPE).

C. FILICULMIS (typical): FIG. 4, ripe glomerule, × 2, from Alva, Oklahoma, *Stevens*, no. 1667 (characteristic *C. Bushii* Britton); FIG. 5, ripe glomerule, × 2, from Hingham, Massachusetts, September 6, 1914, *J. R. Churchill;* FIG. 6, ripe glomerule, × 2, from Cedar Cliff Mountain, North Carolina, *Biltmore Herb.* no. 329a.

PLATE 344. PSILOCARYA SCIRPOIDES Torr.: FIG. 3, inflorescence, × 1, from Brewster, Massachusetts, *Fernald*, no. 16,336; FIG. 4, achene, × 35, from Plymouth, Massachusetts, *Oakes*.

P. SCIRPOIDES var. GRIMESII, n. var.: FIG. 1, inflorescence, × 1, from Cape Henry, Virginia, *Fernald & Griscom*, no. 2770; FIG. 2, achene (with top of style broken off), × 35, from Lake Drummond, Dismal Swamp, Virginia, *Grimes*, no. 4534 (TYPE).

P. NITENS (Vahl) Wood: FIG. 5, achene, × 35, from Santee Canal, South Carolina, *Ravenel*.

P. CORYMBIFERA (C. Wright) Benth.: FIG. 6, achene (without beak), × 35, from near Pinar del Rio, Cuba, *C. Wright*, no. 3774 (TYPE).

PLATE 345. ROTALA RAMOSIOR (L.) Koehne, var. INTERIOR, n. var.: FIG. 1, portion of TYPE, × 1, from Knox Co., Tennessee, *Ruth*, no. 224; FIG. 2, fruits, × 5, from near Cincinnati, Ohio, September 2, 1883, *C. G. Lloyd;* FIG 3, fruits, transitional, × 5, from Webb City, Missouri, *E. J. Palmer*, no. 2626.

R. RAMOSIOR: FIG. 4, fruits, × 5, from Island Brook Reservoir, Bridgeport, Connecticut, September 20, 1896, *E. H. Eames*.

PLATE 346. RHEXIA VENTRICOSA, n. sp.: FIG. 1, fruiting plant and flowering tip, × ½, from east of Little Creek, Princess Anne Co., Virginia, *Fernald & Long*, no. 4046 (TYPE); FIG. 2, fruiting hypanthium, × 4, from TYPE; FIG. 3, seeds, × 10, from near Pungo, Princess Anne Co., Virginia, *Fernald & Griscom*, no. 2870; FIG. 4, seed, × 50, from TYPE.

R. VIRGINICA L.: FIG. 5, seed, × 50, from Brewster, Massachusetts, *Fernald & Long*, no. 17,196.

R. INTERIOR Pennell: FIG. 6, seed, × 50, from Waco, Missouri, *E. J. Palmer*, no. 1256.

R. MARIANA L.: FIG. 7, seed, × 50, from Brewster, Massachusetts, *Fernald*, no. 18,818.

R. MARIANA, var. LEIOSPERMA, n. var.: FIG. 8, seed, × 50, from Montgomery Co., Texas, *R. A. Dixon*, no. 487 (TYPE).

PLATE 347. RHEXIA VIRGINICA L.: FIG. 1, base of plant showing tuber and stolons, × 1, from cobbly beach of St. John's (Wilson's) Lake, Yarmouth Co., Nova Scotia, *Fernald, Bartram & Long*, no. 24,194; FIG. 2, base of plant, showing tuber and stolon, × 1, from sphagnum, near Williamsburg, Virginia, *Grimes*, no. 4315; FIG. 3, elongate and spongy base of plant, × 1, from a bog, Cold Spring, New Jersey, *Gershoy*, no. 499; FIG. 4, fruiting hypanthium, × 4, from Buckhannon, West Virginia, *S. S. Dickey*, no. 195.

R. MARIANA L., var. PURPUREA Michx.: FIG. 5, base of plant showing horizontal rhizomatous stems, × 1, from Cape Henry, Virginia, *Fernald & Long*, no. 4061; FIG. 6, fruiting hypanthium, × 4, from Ocean Springs, Mississippi, *Pollard*, no. 1077.

R. INTERIOR Pennell: FIG. 7, fruiting hypanthium, × 4, from Waco, Missouri, *E. J. Palmer*, no. 1256.

R. ARISTOSA Britton: FIG. 8, fruiting hypanthium, × 4, from Sumter Co., Georgia, *Harper*, no. 466.

PLATE 348. LUDWIGIA SPHAEROCARPA Ell., var. TYPICA: FIG. 1, portion of fruiting plant, × 1, from Valdosta, Georgia, *A. H. Curtiss*, no. 6710; FIG. 2, fruit, × 4, from no. 6710.

Var. JUNGENS, n. var.: FIG. 3, top of a fruiting plant, × 1, from Ellendale, Delaware, September 1, 1892, *Commons;* FIG. 4, fruit, × 4, from same.

Var. MACROCARPA, n. var.: FIG. 5, portion of fruiting plant, × 1, from Lakeville, Massachusetts, August 27, 1899, *W. P. Rich* (TYPE); FIG. 6, fruit, × 4, from the TYPE.

Var. DEAMII, n. var.: FIG. 7, portion of fruiting plant, × 1, from Lake Walker, Porter Co., Indiana, *Deam*, no. 42,350 (TYPE); FIG. 8, fruit, × 4, from TYPE.

PLATE 349. LUDWIGIA, § ISNARDIA. L. NATANS Ell., var. TYPICA: FIG. 2, fruit, × 4, from Braidentown, Florida, *Tracy*, no. 7592.

L. NATANS, var. ROTUNDATA (Griseb.) Fern. & Grisc.: FIG. 3, fruit, × 4, from Texas, *E. Hall*, no. 223.

L. NATANS, var. STIPITATA, n. var.: FIG. 1, node, × 1, from San Bernardino, California, 1881, *G. R. Vasey;* FIG. 2, flower, × 4, from same collection.

L. PALUSTRIS (L.) Ell., var. TYPICA: FIG. 7, fruit, × 4, from Subcarpathian Russia, *Margittal* in Fl. Exsicc. Reipubl. Bohem. Slov.. no. 349.

L. PALUSTRIS, var. AMERICANA (DC.) Fern. & Grisc.; FIG. 8, fruit, × 4, from Hyannisport, Massachusetts, August 9, 1888, *Walter Deane*.

L. PALUSTRIS, var. PACIFICA Fern. & Grisc.: FIG. 5, small plant, × 1, from TYPE-collection, Sproat Lake, Vancouver Island, *W. R. Carter*, no. 128; FIG. 9, fruit, × 4, from TYPE.

L. PALUSTRIS, var. NANA, n. var.: FIG. 6, fruiting branch, × 1, from Florida, *Chapman* in Bilt. Herb. no. 600a; FIG. 10, fruit × 4, from Cameron, Louisiana, *Tracy*, no. 8718 (TYPE).

PLATE 350. LIPPIA LANCEOLATA Michx.: FIG. 1. flowering branch, × 1, from Knott's Island, Virginia, *Fernald & Long*, no. 4155.

L. LANCEOLATA, var. RECOGNITA, n. var.: FIG. 2, flowering branch, × 1, from the TYPE, Fremont Co., Iowa, *Fitzpatrick*.

Photo. *E. C. Ogden.*

Aster subulatus, var. euroauster: fig. 1, portion of type, × 1, from Virginia; fig. 3, heads, × 2, from type.

A. subulatus (typical): fig. 2, heads, × 2, from Massachusetts.

PLATE 351. ASTER SUBULATUS Michx., var. EUROAUSTER, n. var.: FIG. 1, portion of flowering plant, × 1, from North Landing, Norfolk Co., Virginia, *Fernald & Griscom*, no. 2919 (TYPE); FIG. 3, heads, × 2, from TYPE.
A. SUBULATUS (typical): FIG. 2, heads, × 2, from Scituate, Massachusetts, September 6, 1896. *E. F. Williams.*

ADDITIONAL NOTES ON THE FLORA OF COLUMBIA, MISSOURI

FRANCIS DROUET

DURING the past season, study in the flora of Columbia, Missouri, has been continued; and many of the older collections by Daniels (Univ. Mo. Stud. Sci. Ser. **1**(2). 1907), Rickett (Univ. Mo. Stud. **6**(1). 1931), and their associates have been carefully reviewed. In the course of the field work, an attempt has been made to visit the intermediate and outlying parts of the region from which specimens have not before been recorded. If the field study proceeds at the rate it has assumed the past year, it may safely be predicted that the entire region will require examination during all seasons of the year for at least five more years before we can generalize as to the abundance or rarity of individuals or of species. A number of species reported by Tracy (Mo. State Hort. Soc. Rep. 1885, appendix. 1886) and by Daniels[1] but not substantiated by specimens in the Herbarium of the University of Missouri (or elsewhere, according to our present knowledge) have been restored to the known flora in the lists in my previous notes (RHODORA **35**: 359 ff. 1933) and in the present paper.

Collections made in September, 1933, indicate that in certain portions of southern Boone and Callaway Counties not covered by the Memphis silt loam (brown loess) many species found otherwise in Missouri only in the Ozarks may be encountered. *Bumelia lanuginosa, Cunila origanoides, Solidago petiolaris* var. *Wardii, Aster patens,* and others were found in an afternoon about Claysville. Spring and summer collecting may discover more of such "Ozarkian" species new or "lost" to the flora, perhaps among them the once collected *Erythronium americanum* and *Castilleja coccinea.* On the

[1] We must recognize the fact that Dr. Francis Daniels possessed a considerable knowledge of the flora of the northeastern States and discriminated carefully among the specific entities represented on his herbarium sheets, though we at present disagree with much of his nomenclature and many of his identifications. It may well be noted here that his accumulation of specimens, most of which were of his own collecting, comprises almost half of our present herbarium.

railroad tracks north of Browns Station and Hallsville, where the original prairie vegetation is partially preserved in the right-of-way, *Lespedeza capitata, Cornus racemosa, Boltonia latisquama,* and *Helianthus rigidus* were found to be abundant. These areas, with the Perche Creek valley near Harrisburg and the great unknown northwestern and eastern parts of the Columbia region, offer almost untouched collecting-grounds for future students of the local flora.

Mr. Lisle Jeffrey has been a tireless collector and critic during the past season's work. Mr. B. F. Bush, Dr. J. A. Steyermark, and Mr. E. J. Palmer have seen and given opinions on many of the specimens cited below; and I am grateful to them for their suggestions. Dr. L. H. Bailey reviewed the collections of *Vitis* and *Rubus*. Dr. R. C. Friesner looked over certain of the goldenrods. I am indebted also to Dr. W. E. Maneval, Mr. A. A. Jeffrey, and many others for specimens and invaluable criticism.

In the list below, the species collected and reported in the region for the first time are marked by an asterisk (*).

Adiantum Capillus-Veneris L. A fragmentary specimen marked "Columbia, Mo." in the G. C. Broadhead Herbarium, Mo. Bot. Gard. Cited by Pinkerton, Ann. Mo. Bot. Gard. **20**: 46, fig. 2. 1933.

Athyrium asplenioides (Michx.) Desv. *Asplenium Filix-femina* of Gray's Manual, 7th ed., in part. See Rhodora **21**: 179. 1919. A single frond marked "From bed, Columbia, Mo.," also in the Broadhead Herbarium, Mo. Bot. Gard. Cited by Palmer and Steyermark, Amer. Fern Jour. **22**: 114, and by Pinkerton, *loc. cit.* Whether or not the specimen was taken from a cultivated plant is uncertain.

Thelypteris hexagonoptera (Michx.) Weatherby. *Phegopteris hexagonoptera* (Michx.) Fée. See Rhodora **21**: 179. 1919. On shady loess banks at a salt lick one mile north of Highway 40 just west of the M. K. & T. Railroad bridge, Howard Co., *Drouet 432*, May 30, 1933.

*Osmunda Claytoniana L. A few plants were discovered by Mr. Jeffrey and Dr. Steyermark on wooded banks near the sandstone bluffs of Hinkson Creek, *Jeffrey 248*, Sept. 6, 1933.

Alisma Plantago-aquatica L. subsp. brevipes (Greene) Sam., Ark. f. Bot. **24**A (7): 19. 1932. "Shore of Hinkson dam," *Daniels*, July 15, 1902.

Alisma subcordatum Raf. *A. Plantago-aquatica* of the Columbia *Floras*, in part. Not uncommon in old ponds and along shores of creeks. See Ark. f. Bot. **24**A (7): 33. 1932.

*Lemna perpusilla Torr. Pond near Rocheport, *L. R. Setty*, Aug. 1933. The specimen was determined by Dr. Albert Saeger.

*Pogonia trianthophora (Sw.) BSP. On rotted logs in low woods

near Highway C, three miles east of Harrisburg, *Jeffrey & Drouet 1207*, Sept. 23, 1933.

Spiranthes gracilis (Bigel.) Beck. "Low sandstone woods 1 mile west of Highway 63 on Harrisburg Road," *Jeffrey 324*, Sept. 23; pasture-land on the Roby Farm southeast of Rocheport, *Jeffrey 249*, Sept. 8, 1933. See Rickett's *Flora*, p. 25. Reported by Daniels.

Urtica procera Muhl. *U. gracilis* of Amer. Auth., not Ait. See Rhodora **28**: 192–195. 1926. See Rickett's citation in the *Flora*, p. 29.

Comandra Richardsiana Fernald. *C. umbellata* of the Columbia *Floras*, not Nutt.

Polygonum Hydropiper L. var. projectum Stanford, Rhodora **29**: 86. 1927. *P. Hydropiper* of Amer. Auth., in part. *P. Hydropiper* of the Columbia *Floras*.

Polygonum hydropiperoides Michx. See Rhodora **28**: 24. 1926. Abundant in swampy ground along Gans Creek 2½ miles northeast of Providence, *Drouet 1023*, Aug. 24, 1933. Reported by Daniels.

Polygonum sagittatum L. See Rhodora **35**: 362. 1933. Additional collections were made in low ground along Gans Creek 2½ miles northeast of Providence, *Drouet 1026*, and in a swale just east of Mill Creek by Highway KK, *Drouet 1040*, Aug. 24, 1933.

*Polygonum tenue Michx. Prairie by Highway 63 west of Sturgeon, *Drouet 1092*, Sept. 3, 1933.

Atriplex patula L. var. hastata (L.) Gray. A naturalized weed that may prove to be generally distributed in waste places about Columbia, as described by Daniels (Mo. State Hort. Soc. Rep. 1898: 156). Recently found in a yard on College Ave., *Drouet 941*, Aug. 11, and in an alley by Hitt St. north of Cherry St., *Drouet 1219*, Sept. 29, 1933.

Acnida tamariscina (Nutt.) Wood. Generally distributed as a weed. New collections come from a garden in East Highlands, Columbia, *Drouet 915*, Aug. 9, and from cut-over timber-land northeast of Claysville, *Drouet 1233*, Sept. 30, 1933. A fragmentary specimen, *Daniels*, Aug. 1897, from "bottoms of the Missouri, Providence," and labeled *Amarantus hybridus*, is referable to this species.

*Oxybaphus linearis (Pursh) Robinson. *Allionia linearis* Pursh. On limestone bluffs of the Missouri River southeast of Rocheport, *Jeffrey & Drouet 1116*, Sept. 8, 1933. To be referred to this species is a broader-leaved specimen from near Balanced Rock, south of Columbia, *Drouet*, Aug. 27, 1931.

Arenaria stricta Michx. var. texana Robinson. *Sabulina texana* (Robinson) Rydb. This species is of possibly wider distribution in the Columbia region than Rickett (*Flora*, p. 33) indicates. Daniels (*Flora*, p. 137) says of it: "rare south along Hinkson Creek." We have collected it on limestone pinnacles along Cedar Creek two miles southeast of Selby (Barnes Chapel), *Allan Jeffrey & Drouet 956*, Aug. 12, 1933.

Claytonia virginica L. Including *C. robusta* of Drouet, Rhodora **35**: 362, not Rydb.?

Plants answering to the description of *C. robusta* were collected and observed in various places in the spring of 1933. These robust, broad-leaved individuals were found invariably in shady, loose soil—about trunks of trees and bases of large rocks and beneath bushes. In adjacent open ground, packed more or less hard by animals and rain and exposed to the sun, linear-leaved plants referable to *C. virginica* grew. Between the two extremes of soil types were plants with leaves intermediate in shape. At least about Columbia, the forms characterized by broad leaves appear to belong to but one species and should be retained in *C. virginica*. Plants with still broader and more bluntly tipped blades appear as solitary specimens to be referable to *C. caroliniana* Walt. in its more robust state; but these plants have been seen likewise only in shady, loose soil, always accompanied by the linear-leaved individuals in the full sunlight a few feet away. A host of intermediate forms are found between. My 303, from the Ashland Road just south of Columbia, April 8, 1933, illustrates a few types of these plants collected in a small area. The problem is made more interesting by the observation that the plants in the loose soil begin growth and attain maturity earlier in the season than do those in the packed soil.

Nelumbo pentapetala (Walt.) Fernald. *N. lutea* Ait. In a pond by Oakland Road just north of Paris Road, *Jeffrey & Drouet 712*, July 21, 1933. See Rhodora **36**: 23. 1934.

Delphinium Ajacis L. Escaped in waste places and established on banks of Highway K south of Hinkson Creek, *Drouet 730*, July 24, 1933. See Rickett's note in the *Flora*, p. 35.

Benzoin aestivale (L.) Nees. Ridge northeast of Huntsdale, *Jeffrey 222*, Aug. 27, 1933. This is the first specimen that we have seen from Boone Co. since Broadhead's collection in 1857 (see Rickett's *Flora*, p. 36).

Cardamine parviflora L. var. arenicola (Britton) O. E. Schultz. *C. parviflora* of Amer. Auth., not L. See Rhodora **29**: 191–192. 1927.

Descurainia intermedia (Rydb.) Daniels, Univ. Mo. Stud. Sci. Ser. **1**(2): 147. 1907. *Sisymbrium canescens* Nutt. var. *brachycarpon* (Richards.) Wats. All specimens placed in *S. brachycarpon* and *S. canescens* by Rickett and in *D. intermedia* and *D. canescens* by Daniels are referred to this species.

Sedum triphyllum (Haw.) S. F. Gray. *S. purpureum* Tausch. *S. Telephium* of the Columbia *Floras*, not L. See Rhodora **11**: 46. 1909.

Amelanchier canadensis (L.) Medic. Including var. *Botryapium* of Rickett's *Flora*. See Rhodora **14**: 150. 1912.

Malus ioensis Brit. var. Palmeri Rehd., in Man. Cult. Trees & Shrubs, 399. 1927. *Pyrus iocnsis* Bailey *var.* "Thicket s[outh] of golf-links, Columbia," *Daniels*, Apr. 26, 1902.

Potentilla simplex Michx. var. typica Fernald. *P. canadensis* Amer. Auth., in part, not L. See Rhodora **33**: 189. 1931. *P. canadensis* and the var. *simplex* of Rickett's *Flora*.

Rubus alleghcniensis Porter, not of Rickett's *Flora*. See Gentes Herb. **2**(6): 380. 1932. Along a roadside eight miles north of Columbia, *Drouet 405*, May 18, 1933.

Rubus Enslenii Tratt. See Gentes Herb. **2**(6): 325. "Wild places, Columbia," *Daniels*, July 1903; County Road Prairie, Callaway Co., *Drouet 475*, June 3, 1933.

Rubus frondosus Bigel. See Gentes Herb. **2**(6): 402 and **3**(5): 258. A "western representative," according to Dr. Bailey's label. In the "swamp south," *Drouet*, May 29, 1932. Rickett's *R. frondosus* is *R. abactus* Bailey.

*Rubus laudatus Berger. See Gentes Herb. **3**(5): 265–267. 1934. Sandstone bluffs of Hinkson Creek, *Rickett 362*, May 16, 1932; Tinspout Spring, *Drouet 413*, May 21, 1933.

Rubus ostryifolius Rydb. See Gentes Herb. **2**(6): 392. Including Rickett's *R. alleghcniensis* and Daniels' *R. nigrobaccus*.

Crotalaria sagittalis L. Abundant by the railroad north of Browns Station, *Jeffrey & Drouet 697*, July 21, 1933.

Trifolium dubium Sibth. "Pastures; rare. Columbia, Mo.," *Daniels*, July, 1897.

Acalypha gracilens Gray var. monococca Engelm. See Rhodora **29**: 203. 1927. *A. gracilens* of the Columbia *Floras*.

Euphorbia obtusata Pursh. *E. missouriensis* Small. *E. dictyosperma* of Daniels and Rickett.

*Callitriche heterophylla Pursh. Pond in the County Road Prairie, Callaway Co., *Jeffrey & Drouet 470*, June 3, 1933.

Vitis cinerea Engelm. Including *V. aestivalis* of the Columbia *Floras*.

Vitis Linsecumii Buckl. Two specimens probably referable to this species, according to Dr. Bailey: "swamp s[outh], Columbia," *Daniels*, Aug. 1904; "Round Pool," *Rickett*, May 25, 1927. See Gentes Herb. **3**(4): 192. 1934.

Vitis palmata Vahl. "Along streams, Columbia," *Daniels*, Aug. 1904.

*Hibiscus militaris Cav. Low ground between McBaine and Huntsdale, *Jeffrey 221*, Aug. 27, 1933.

Gaura parviflora Dougl. Abundant on hillsides on the University Farm east of the sheep barn, Columbia, *Jeffrey & Drouet 575*, June 27, 1933.

*Ludwigia polycarpa Short & Peter. Bank of Hinkson Creek at Grindstone Creek, *Jeffrey & Drouet 1147*, Sept. 15; low ground along railroad north of Hallsville, *Jeffrey & Drouet 1176*, Sept. 16, 1933.

Cornus racemosa Lam. *C. paniculata* L'Hér. *C. candidissima* of Rickett and of Drouet. Apparently more widely distributed in the region than formerly supposed. Additional collections are: thickets near the sandstone bluffs of Hinkson Creek, *Drouet 805*, July 29, 1933; hillside by Hinkson Creek north of Tinspout Spring, *Drouet 904*, Aug. 9, 1933; fence-rows and low thickets by the railroad north of Hallsville, *Jeffrey & Drouet 1174*, Sept. 16, 1933. See Rehder, Man. Cult. Trees & Shrubs, 670. 1927.

*Bumelia lanuginosa Walt. Missouri River bluffs near Wilton P. O., *A. A. Jeffrey 307*, Sept. 17, 1933; along Claysville Road near Highway 63, Boone Co., *Jeffrey 351*, Sept. 30, 1933.

*Cuscuta glomerata Choisy. *C. paradoxa* Raf. County Road Prairie, Callaway Co., *Jeffrey & Drouet 827, 830*, July 30; roadside two miles east of Deer Park, *Jeffrey & Drouet 946*, Aug. 12; railroad north of Hallsville, *Jeffrey & Drouet 1173*, Sept. 16, 1933.

Ipomoea coccinea L. By Black's Mill Road south of Columbia, *Drouet 1159*, Sept. 15; weed about buildings in Claysville, *Drouet 1221*, Sept. 30, 1933. Steyermark (Rhodora **35**: 289) describes this species as "only sporadically adventive in the state."

Ipomoea lacunosa L. "Fence-row; rare. Columbia," *Daniels*, July 1897; horticultural plots, University of Missouri, *Jeffrey & Drouet 1044*, Aug. 28; cornfield by Highway 63 west of Sturgeon, *Drouet 1093*, Sept. 3; by Black's Mill Road south of Columbia, *Jeffrey & Drouet 1155*, Sept. 15; waste ground east of the Stadium, Columbia, *Drouet 1181*, Sept. 20, 1933.

Onosmodium subsetosum Mack. & Bush. Including *O. molle* of the Columbia *Floras*. The specimens previously referred to *O. molle* are broken off just below the lowest branches, so that the character of the stems was not known. The nutlets, however, are those of *O. subsetosum*.

*Cunila origanoides (L.) Britton. Rocky woods north of Claysville, *Drouet 1232*, Sept. 30, 1933.

Hedeoma hispida Pursh. Widely distributed in the region, especially in old fields and barrens.

Mentha arvensis L. var. glabrata (Benth.) Fernald. Including *M. piperita* of Rickett's *Flora*.

Scutellaria ambigua Nutt. *S. parvula* Michx. var. *ambigua* (Nutt.) Fernald. Including *S. parvula* of Daniels, and of Rickett in part. Two sheets are retained in S. parvula Michx.: *Daniels*, June, 1897, as *S. campestris*, and *Rickett*, June, 1926. See Contrib. U. S. Nat. Herb. **22**(10): 729. 1927.

Physalis subglabrata Mack. & Bush. Collected in many localities in the Columbia region. One specimen from Rocheport, *Rickett*, July 23, 1927, is placed here.

Martynia louisiana Mill. University Orchard, Columbia, *C. G. Schmitt*, Sept. 1, 1933.

*Plantago elongata Pursh. *P. pusilla* Nutt. Moist loess banks near the salt lick one mile north of Highway 40 just west of the M. K. & T. railroad bridge, Howard Co., *Drouet 434*, May 30, 1933.

HOUSTONIA ANGUSTIFOLIA Michx. Hillsides along Bonne Femme Creek south of Pierpont, *Jeffrey*, June 14, *Drouet 542*, June 24, 1933.

DIPSACUS SYLVESTRIS Huds. Swampy ground by Mill Creek near Highway KK, *Jeffrey & Drouet 1043*, Aug. 24, 1933.

LOBELIA CARDINALIS L. Low ground by Cedar Creek two miles southeast of Selby (Barnes Chapel), *A. A. Jeffrey & Drouet 955*, Aug. 12; in a willow thicket below the sandstone bluffs of Hinkson Creek, *Drouet 1100*, Sept. 6, 1933.

AMBROSIA PSILOSTACHYA DC. Railroad embankments near the M. K. & T. Station, Columbia, *Drouet 1195*, Sept. 22, 1933. See Rickett's *Flora*, p. 72, and RHODORA **35**: 361, footnote.

*ARTEMISIA LUDOVICIANA Nutt. var. LINDHEIMERIANA (Scheele) Bush, Amer. Midl. Nat. **11**: 35. 1928. Spreading in fence-rows and in wild places, open woods in the southwest corner of Columbia Cemetery, *Drouet 1122*, Sept. 9, 1933.

*ASTER PATENS Ait. By the Claysville Road south of Highway 63, Boone Co., *Jeffrey 356*, loess woods north of Hartsburg, *Drouet 1227*, Sept. 30, 1933.

*BOLTONIA LATISQUAMA Gray. Prairie by Highway 63 west of Sturgeon, *Drouet 1094*, Sept. 3; low ground by the railroad north of Browns Station, *Drouet 1167*, Sept. 16, 1933.

*CENTAUREA MACULOSA Lam. Established in an old field north of Hartsburg, *Drouet 1228a*, Sept. 30, 1933.

CENTAUREA VOCHINENSIS Bernh. Established in Sanborn Field, Columbia, *Jeffrey 239*, Sept. 4, 1933.

COREOPSIS TRIPTERIS L. var. DEAMII Standley, RHODORA **32**: 33. 1930. Abundant in low ground west of Browns Station, *Drouet 878*, Aug. 2, 1933. An old specimen, "Columbia, Mo.," *Daniels*, July, Aug., 1897, consisting of an inflorescence and upper cauline leaf, was recently discovered (see Rickett's *Flora*, p. 75) and may possibly be referred to the typical variety.

ERECHTITES HIERACIFOLIA (L.) Raf. var. INTERMEDIA Fernald, RHODORA **19**: 27. 1917. *E. hieracifolia* of Gray's Manual, 7th ed., in part, not Raf. *E. hieracifolia* of the Columbia *Floras*.

EUPATORIUM COELESTINUM L. Established on ballast along Stewart Road east of Garth Ave., Columbia, *Steyermark & Drouet 1058*, Sept. 2, 1933. See Rickett's *Flora*, p. 76.

GRINDELIA SERRULATA Rydb., Man. Fl. Prairies & Plains, p. 784. 1932. *G. squarrosa* of Rickett's *Flora*. "Agriculture Experimental Field," *Rickett*, June 28, 1928; pasture, 600 High St., Columbia, *Jeffrey 100*, Aug. 5, 1933.

KUHNIA EUPATORIOIDES L. and the var. CORYMBULOSA T. & G. *K. suaveolens* of Drouet, RHODORA **35**: 364.

LACTUCA CANADENSIS L. Including *L. sagittifolia* of the Columbia *Floras* and *L. integrifolia* Bigel. The four varieties (RHODORA **22**: 9–11. 1920) are apparently widespread: var. TYPICA Wiegand, e. g., *Drouet 597;* var. LATIFOLIA O. Kuntze, e. g., County Road Prairie, *Rickett*, July 27, 1930; var. INTEGRIFOLIA (Bigel.) Gray, e. g., roadsides, *Daniels*, July, 1903; and var. OBOVATA Wiegand, e. g., *Drouet 923*.

Polymnia Uvedalia L. var. genuina Blake, Rhodora **19**: 46–48. 1917. Low woods near Roby's Spring, southeast of Rocheport, *Jeffrey & Drouet 1110*, Sept. 8, 1933. See Rickett's *Flora*, p. 79. Our plants have branches of the inflorescence copiously hispid-pilose, but the many glands are stipitate.

Prenanthes crepidinea Michx. In woods by Perche Creek south of Highway 40, *A. A. Jeffrey & Drouet 1184*, Sept. 21, 1933.

Rudbeckia hirta L. Including *R. fulgida* of Drouet, Rhodora **35**: 364.

Rudbeckia subtomentosa Pursh. Collected in low ground throughout the Columbia region. See Rhodora **35**: 364 and Rickett's *Flora*, p. 79.

Solidago canadensis L. var. gilvocanescens Rydb. Much of *S. altissima* of Rickett's *Flora*.

*Solidago glaberrima Martens. *S. missouriensis* Nutt. In the County Road Prairie, Callaway Co., *Jeffrey & Drouet 817*, July 30, 1933; roadside east of Deer Park, *Jeffrey & Drouet 945*, Aug. 12, 1933.

*Solidago gymnospermoides (Greene) Fernald. By the railroad north of Hallsville, *Jeffrey 305*, Sept. 16; by Highway 63 north of Hinton, *Drouet 1205*, Sept. 23; old field by Richland Road east of Columbia, *Jeffrey 337*, *Drouet 1217*, Sept. 27, 1933. The plants from near Hinton have smaller involucres, as Friesner describes for his *S. remota*, Butler Univ. Stud. **3**(1): 63. 1933.

*Solidago petiolaris Ait. var. Wardii (Britton) Fernald. Open rocky woods north of Claysville, Boone Co., *Drouet 1228*, Sept. 30, 1933.

Solidago rigida L. Along railroad north of Hallsville, *Jeffrey 304*, *Drouet 1170*, Sept. 16, 1933.

Xanthium chinense Mill. *X. canadense* of the Columbia *Floras*, not Mill.

Xanthium pennsylvanicum Wallr. *X. canadense of* Gray's Manual, 7th ed., in part. Collected at several stations within the region.

Department of Botany, University of Missouri.

Volume 37, no. 436, including pages 129–164 and plates 332–344, was issued 1 April, 1935.

NOTICE TO SUBSCRIBERS

Subscription revenue covers less than one-half the total cost of publication of RHODORA. The strictest economy will be necessary to permit future publication on the same modest scale as has obtained in recent years.

About one-third of our subscribers file their renewal orders through commercial subscription agencies which habitually deduct 10% from every remittance as a commission.

Many remittances reach the management in the form of drafts or checks which are subject to bank collection and exchange charges of varying amounts, owing to Clearing House rules.

Beginning January 1, 1932, the subscription rate to RHODORA will be $2.00 *net* per annum payable in Boston or New York funds or their equivalent (i. e. drafts or postal money orders which are collectible in Boston at par). All subscription orders from agencies must be accompanied by remittances at the *net* rate without deduction. Hence all subscribers who require the convenience of agency service must regard the subscription rate to RHORORA as $2.00, plus the charges of agents.

NOTICE TO CONTRIBUTORS

IN accordance with the Editorial Announcement of March, 1931, that RHODORA will follow the provision of the International Rules of Botanical Nomenclature, that the publication of names of new groups will be valid only when they are accompanied by a Latin diagnosis, contributors are notified to see that all new species or other groups proposed by them for publication in RHODORA have Latin diagnoses. If desired by contributors, the Editorial Board of RHODORA will undertake (with charges at cost for matter of considerable length) to have their English diagnoses converted into Latin.